THE JOURNAL OF SPEECH AND HEARING DISORDERS

Volume 16 June 1951 Number 2

Formal Call for Papers 99

Editorial: The Modern Meaning of the American Speech and Hearing Association 100

Muscle Training for Cerebral Palsied Speech Cases
HAROLD WESTLAKE 103

An Exploratory Investigation of the Self-Concept of Stutterers
FRED E. FIEDLER and JOSEPH M. WEPMAN 110

Otologic Applications of Audiology
R. E. JORDAN 115

Special Techniques in Testing the Hearing of Children
WILLIAM G. HARDY and JOHN E. BORDLEY 123

Studies in Speech Reception Testing
MARCELLA PEPPER DOYNE and M. D. STEER 132

Michigan's Mobile Hearing Units
COURTNEY D. OSBORN 140

A Survey of Services for the Speech and Hearing Handicapped in New England
WILBERT PRONOVOST 148

Cerebral Palsy Professional Training Activities in this Country
MARTIN F. PALMER 157

Infant Speech: Consonantal Position
ORVIS C. IRWIN 159

A Device for Continuously Variable Time Delay of Headset Monitoring During Magnetic Recording of Speech
GRANT FAIRBANKS and ROBERT JAEGER 162

Letters to the Editor 165

Book Reviews, 167 Abstracts, 183

News and Announcements, 199

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NOTICE TO AUTHORS

Before submitting manuscripts for publication authors should consult Information for Contributors to the Journal of Speech and Hearing Disorders, *JSHD*, 14, 1949, 93-94. Prospective authors are invited to write the Editor for copies of this Note, and of its supplement, Examples of Manuscript Form.

The American Speech and Hearing Association
TWENTY-SEVENTH ANNUAL CONVENTION

December 27 - 29, 1951, Stevens Hotel, Chicago, Illinois

FORMAL CALL FOR PAPERS

THE American Speech and Hearing Association will meet this year in conjunction with the Speech Association of America and the American Educational Theatre Association.

The Program Committee will receive until October 1 abstracts of papers and addresses proposed for presentation at the convention. Topics cannot be considered unless accompanied by an abstract of the paper.

Papers are solicited in relation to the following general subjects:

1. Theoretical or experimental papers on speech disorders, hearing disorders, experimental phonetics, speech science, or psychoacoustics.

2. Practical discussions of techniques for the rehabilitation of persons afflicted by disorders of speech and hearing.

3. National, state or city programs for the rehabilitation of persons with speech or hearing disorders.

4. Experimental or practical papers concerning speech and hearing factors in military communication.

Space requests for scientific exhibits will be accepted.

The Committee will operate under the rules set down in the Constitution of the Association. It is suggested that papers be composed for a 15-minute presentation. Except under extraordinary circumstances no paper can be accepted which requires more than 20 minutes for presentation.

All abstracts must be received by October 1, 1951. In addition to summarizing the paper each abstract must indicate (a) the full title of the paper and the name of the contributor as requested for listing in the printed program, (b) the time requirements, (c) details on the type of visual or audio aids needed, and (d) special requirements. The professional affiliation of the author should be stated.

Receipt of an asbtract will be taken as evidence that the contributor is aware of the following rules governing the conduct of section meetings:

1. All meetings will begin when scheduled.

2. Chairmen will, without exception, hold the speaker to the time limits set forth in the printed program.

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EDITORIAL

The Modern Meaning Of The American Speech and Hearing Association

SEVERAL YEARS ago the American Speech Correction Association removed the word *Correction* from its name, substituted the words *and Hearing*, and became the American Speech and Hearing Association. Semantic recognition was being given to three facts. One of these facts was the Association's activity in hearing disorders and psychoacoustics. Another fact was its interest in the pathologies of speech and hearing, as well as in their correction. A third fact was its concern with the scientific study and investigation of normal speech and hearing processes. Actually these facts had always been facts, going back to the earliest traditions of the organization, but there had been growth. The growth is unmistakable in the convention programs and in the pages of this journal, and it is continuing. In 1947 and 1948, for example, the *Journal* printed 118 pages of articles in the areas of hearing disorders and speech science, while these same areas required 281 pages in 1949 and 1950.

In 1950, after three years of study, the Association voted to reorganize its membership framework, further acknowledging and encouraging these same forces. Instead of five classes of membership it defined only two, Member and Associate, and clinical competence was removed as a Membership requirement. To become a Member an applicant is only required to hold the Bachelor's degree or higher in the general area of the Association's interests; Associates have no academic requirements. This does not mean, however, that clinical standards have been deserted; it is likely, in fact, that they will be even more rigorously protected. Clinical certification of qualified Members is now accomplished by review of credentials subsequent to and separate from application for status as a Member. To some, familiar with the tight, elaborate structure of the past, this may have appeared as a drastic change. In truth, ASHA had merely recognized once again what it is and what it could become.

It is important to understand that ASHA is interdisciplinary. It exists for the sake of a problem, not for the sake of any single discipline, profession, or specialty. In university jargon it is more like an Institute than a Department. But the old membership barriers, laudable as was their intent, belied this conception. Last year, for instance, only 19 physicians belonged to the Association, most of them as honorary members. The liberalization of requirements now permits persons from a variety of disciplines to become voting Members.

From the standpoint of relationships with other associations a large and healthy overlapping of memberships

is possible. Such overlapping is substantial already in some directions, but smaller than it should be in others, as revealed by a count of persons who belong to other representative national organizations as well as to ASHA. For purposes of illustration the Speech Association of America, the American Psychological Association, and the Acoustical Society of America are typical tangent societies with which overlap would appear to be desirable from ASHA's point of view.

In 1950 the associations in question reported[1] their total memberships to be:

American Speech and Hearing Association	1623
Speech Association of America	4117
American Psychological Association[2]	7273
Acoustical Society of America	1517

ASHA's total divided into 811 Members (pooling the obsolete classes of Fellow, Professional Member, and Clinical Member) and 812 Associates (many of whom now qualify for Membership according to the new requirement).

In terms of affiliation with the other groups, ASHA's list broke down as follows:

	Members	*Associates*	*Total*
Affiliated with SAA, APA, or ASA	428	240	668
Not affiliated with any of the three	383	572	955

Approximately 40%, in other words, belong to at least one of the three, the greatest proportion coming from the Member category.

That most, but not all, of these were affiliated with only one other group is shown by the following tabulation:

	Members	*Associates*	*Total*
Affiliated with one other	379	234	613
Affiliated with two others	40	6	46
Affiliated with three others	9	0	9

Finally, with respect to affiliation with specific associations, the distributions are:

	Members	*Associates*	*Total*
Affiliated with SAA	391	221	612
Affiliated with APA	69	20	89
Affiliated with ASA	26	5	31

The overlap of 612 with SAA's membership, amounting to 38% of the ASHA list and to 15% of SAA's total, is gratifying, although it could be larger with profit to all. But the figures for the other two associations are distressingly small when one reflects that communication by means of speech is probably the most uniquely human feature of man's behavior, and that it is carried on by means of acoustic signals. Some of the blame for this state of affairs may be charged to mutually exclusive membership requirements. Whatever the merits of such requirements may be, the fact that only 5% of ASHA's members also belong to APA, for instance, and that these 89 persons represent little more than 1% of APA's membership, exemplifies the situation that ASHA is attempting to correct. Such figures are also food for sober thought. If ASHA purports, as it does, to address itself seriously to problems of human speech and human hearing, it certainly should include in its task force more than 89 psychologists and 31 acousticians.

A few years ago ASHA took another step that also has implications for its relationships with other groups,

[1] Sources used were ASHA's 1950 Annual Directory, SAA's 1951 Directory, APA's 1950 Directory, and ASA's 1950 Membership list, all of which were made up in the late summer or fall of 1950.

[2] APA also reported approximately 2200 Affiliates, not used in the present tabulations.

especially with the Speech Association of America. With a conviction that conventions are matters of business and not of vacation, and a rising impatience at being absent from homes and families at the Christmas season, the membership voted to try some other time for its annual meeting. After attempting unsuccessfully for several years to persuade SAA to join it in such a move, ASHA arranged an independent experimental convention for November, 1950, at Columbus, Ohio. That experiment amply demonstrated that a successful meeting can be held at a time other than Christmas. Attendance was the largest in the organization's history, 728 persons being registered officially. One session drew an audience of more than 1,000. The feasibility of an independent meeting was also shown. The membership is again being polled on time-and-place this year, and firm plans will be made when those results are available. In December of 1951, by prior agreement, ASHA returns to a joint meeting with SAA, but a motion to continue this arrangement in 1952 was defeated at the last annual business meeting. It seems probable, therefore, that these traditional joint meetings will not be held after this year, since SAA's plans have already been made for years ahead.

The three actions that have been reviewed here—the change of name, the revision of membership requirements, and the decision to seek a different convention time—were taken by the American Speech and Hearing Association in the interests of its mission. It is important that we understand the backgrounds, motivations, and implications of these actions. Through such understanding we will see our modern meaning that much more clearly.

GRANT FAIRBANKS

Muscle Training For Cerebral Palsied Speech Cases

Harold Westlake

MUSCLE TRAINING, as it is usually used in connection with the rehabilitation of cerebral palsied persons, refers to intensive work on particular muscles or muscle groups in order to strengthen them, to increase the range, speed, and accuracy of their motion, or to develop patterns of movement. This muscle training may be carried out by incorporating it into functional work or it may be accomplished in isolation from any useful or meaningful activity. Ordinarily, both functional and nonfunctional work is used, the latter often preceding the former.

Whether the speech therapist emphasizes muscle training aspects in his work or not, it is being given in some form in any approach to speech training with cerebral palsied persons. It is the opinion of the writer that careful attention to the motor learning aspects of the speech work is important in assessing the needs and the progress of cerebral palsied cases.

Harold Westlake (Ph.D., Michigan, 1938) is Professor of Speech Correction, Head of the Department of Speech Correction and Audiology, and Director of the Speech and Hearing Clinics, Northwestern University. The content of this article is an adaptation to speech training of the principles and procedures for rehabilitating cerebral palsied persons as they are taught by Dr. Winthrop Phelps of Baltimore. The writer wishes to give due credit to Dr. Phelps and his staff at the Children's Rehabilitation Institute.

Two interesting things appear to have been demonstrated by the medical men who utilize muscle training through the physical therapists: (1) Patterns of movement can be broken down and analyzed in terms of component parts. (2) Intensive work on isolated parts of a larger activity is productive and very frequently necessary.

Walking is an example of a movement pattern which the medical men and physical therapists have broken down into basic elements, the sequence being: (1) head balance, (2) sitting balance, (3) kneeling balance, (4) standing balance, and (5) reciprocation. An analysis of the functioning of particular muscles in terms of the above divisions furnishes a basis for a detailed evaluation of walking as well as a systematic frame for attempting to improve it.

The importance of detailed work on isolated segments of a larger movement can also be illustrated by approaches to teaching a cerebral palsied person to walk. One might approach the problem with the assumption that the important potentials for walking were present and that these potentials could be developed by getting the case up on his feet and 'walking him' —taking a direct and functional procedure right from the beginning. There is no doubt that this approach works well in many cases, particularly

those with the milder involvements. The results, however, may be more apparent than real. The case often develops compensations for inadequacies with respect to particular parts of the walking activity. There may be hypertension in some muscles to make up for weakness in others; a leg might be thrown out in an arc because of weakness in the flexor muscles; there may be bizarre postural adjustments to maintain balance which is threatened by weak muscles. In other words, granting that the subject is successful in walking, one wonders if an analytic approach wouldn't result in a much more efficient walking pattern. Experience seems to indicate that it can.

Likewise in teaching speech, an entirely functional approach can result in useful speech which has many compensatory movements that set definite limits on its efficiency. Being unable to elevate the tongue, many cerebral palsied cases will force the tongue up with the mandible; or not being able to sustain exhalation or phonation, they will gasp out single words or syllables. These and other limiting compensations frequently do not work themselves out through repeated use, and so must be given special attention. With very involved cases, working on basic elements is enforced from the beginning because subjects very often have no motor skills to support a functional approach.

The thesis of this paper is not that the functional approach should not be used in the speech training of cerebral palsied persons. To the contrary, it probably should be a very important part of the teaching with all cases. The thesis of the paper is that the elemental approach to motor learning used successfully by medical men and physical therapists has advantages for the speech therapist in recognizing weaknesses in the speaking act and improving the efficiency of the speech.

For purposes of evaluation, the speaking act probably can be fractionated as easily as walking. An attempt to list the segments is given below:

1. Ability to sustain an even exhalation for 10 seconds.
2. Ability to sustain an even tone for 10 seconds.
3. Ability to open and close the mouth 10 times in 10 seconds, having the mandible, tongue, and lips move together.
4. Ability to open and close the lips 10 times in 10 seconds while the mandible is stabilized by keeping the upper and lower teeth together.
5. Ability to raise the tip of the tongue to the rugae 10 times in 10 seconds while the mandible is stabilized by setting a rubber block, about a quarter of an inch thick, between the molars.
6. Ability to move the tongue tip from one corner of the mouth to the other 10 times in 10 seconds.
7. Ability to extend the corners of the lips from the rounded position five times in 10 seconds, when the mandible is stabilized by keeping the upper and lower teeth together.
8. Good peristaltic activity of the tongue—ability to propel foods and fluids from the front of the mouth to the back of the mouth and to swallow them.

This breakdown of the speaking act is obviously not the only one which might be used. Many other parts might have been isolated, but in practice the breakdown has proved to be practical in that if these activities can be performed efficiently, the others are often present. It does represent a sampling of the mass and selective ac-

tivity which goes on during speech. The rates suggested for the activities are, of course, arbitrary. They serve primarily as reference levels against which improvement can be graphed. The rates have proved to be realistic in terms of what may be expected with persons whose cerebral palsy conditions are severe enough to warrant a special approach to the speech training. In each part patterned or continuous movements are stressed rather than single movements.

In evaluating a subject's physiological readiness for speech by use of the above breakdown, various further observations are made. It is interesting to note differences between what a case can do when he 'wills' to do something such as open and close his mouth at the request of the therapist and the automatic control he shows during some vegetative act such as eating. With very young children the movements are often given subjective ratings of 'good, fair, poor, and absent' rather than using numerical scores, and usually practically all of the items can be rated only in terms of vegetative and reflex activity because of the immaturity.

In summary, the use of the form for evaluating the motor readiness for speech has the following advantages: (1) It describes the over-all motor adequacy; (2) it isolates foci of particular difficulty; (3) it furnishes a reference base for measuring improvement; and (4) it encourages systematic therapy since it constitutes a map of an important aspect of the speech training.

One way of describing what happens in motor education is to say a subject is placed in a struggle situation where a particular response brings a reward. The expected thing is that the initial efforts will be characterized by mass activity and experimental attempts. Successful and selective movements will be fixed by achieving the reward. If the cerebral palsied person has the potentials for particular skills they often emerge through the use of controlled struggle situations.

There is a high probability that many of the motor skills which are basic to the sequential speaking activity have not emerged in cerebral palsied children only because their special care has prevented their having the necessary types of struggle situations. As an example, one might take the selective activity of the tip of the tongue, which is very important in talking. This skill probably emerges in normal children because their feeding experiences have the essential ingredients of a suitable struggle situation with adequate rewards. It is different with so many cerebral palsied children, however, who are fed by placing spoonfuls of soft food on the backs of their tongues while they are in semi-reclining positions. Almost any shifting of the back of the tongue loosens the food so that it can slide back for swallowing. There is no reason for expecting precise control of the jaws, lips, and tongue to develop from this program.

One way of modifying the feeding so as to set up a useful struggle situation is to place a child on his stomach on a plinth and to raise his head and shoulders by placing a folded pillow under his chest. Then he is fed by placing pieces of puffed rice or cookies between his lips, in his buccal cavities, or on the tip of his tongue. In this situation he misses his reward if he can't keep his lips and jaws closed. He cannot satisfy himself unless he successfully propels the food to the back of the mouth for swallowing against gravity. If a good sized mir-

ror is placed on the table below his head, he can be shown the food that escapes through his lips and he can see it when it drops on the mirror, thus supporting his insight and direction of effort.

A study of chartings of the motor readiness for speech of several hundred cerebral palsied children indicates that the movement which is most apt to be absent or inadequate is the elevation of the tip of the tongue. This movement is essential in forming about 85 per cent of the consonants used in continuous speaking. It is a movement that does not emerge in the compensated feeding movements of these cases. Frequently modified feeding will result in establishing of this essential skill.

Motor training can be approached on two levels as was suggested above in the evaluating procedures. It can be carried out by formal exercises, such as voluntarily moving the tongue before a mirror, or it can be started on a lower level in connection with vegetative activities such as eating or drinking. The latter is used almost exclusively with immature children whose cooperation is limited. With older children it seems that in training a particular activity progressing from movement in connection with reflex or vegetative activity to a more abstract activity, voluntary training is most efficient.

Other technics which have long been used by medical workers and physical therapists in cerebral palsy work can be adapted in motor training for speech. One of these is the use of confusion motions. The confusion motion is a motion that occurs in one part of the body when another part of the body is moved. It is most apt to occur when the movement of the part the subject 'wills' to move is difficult or when it is resisted. For example, if a person is seated with his feet hanging over the edge of a table, if he is told to raise his knee while another person holds it down on the table firmly, the subject will often flex his ankle even though he has not thought of or tried to do so. The interesting thing is that sometimes a person who cannot voluntarily flex his ankle will do it when his efforts to raise his leg are resisted.

Many confusion motions have been observed in the speech training with cerebral palsied persons. Some cases who cannot tighten the lips voluntarily will do so when they are asked to bite hard on a rubber block placed between their teeth. Others will close their jaws more efficiently when the lips are held apart forcibly and they are asked to close them. Children who cannot raise the tips of their tongues under ordinary circumstances have done so when their mouths were held open. A person who cannot lateralize his tongue often will draw his tongue to one side if he is asked to turn his head to one side while the therapist resists this head motion. Very occasionally a youngster who cannot close his mouth easily will close it rapidly if a backward movement of his head is resisted.

This type of movement which is induced in an apparently nonfunctional part of the body has been labelled 'confusion motion' because there has been no apparent relationship between the confused motion and the intended motion. The writer's experience in using confusion motions in speech training has suggested that there is a possible relation in that the direction of the induced motion is so often in the direction of the resisted motion and that the induced motion often accomplishes to some degree the intent of the willed motion, i.e., raising the tongue is a manner of closing off the

mouth when the movement of the mandible is resisted. To the degree that this relationship appears, the confusion motion may be connected with overflow motion observed in normal persons.

Confusion motions are usually brought into voluntary control by the following steps: (1) The motion is induced repeatedly by resisting the willed motion; (2) the resistance applied is gradually reduced until (3) the motion is made voluntarily. The therapist moves through this sequence over a long period of time and unfortunately is not always successful in reaching the third step, but as therapy, it is a good gamble.

The use of the confusion motion in speech training is difficult to evaluate. Eliciting a confusion motion may be a way of demonstrating a particular motor potential which cannot be shown in other ways in evaluating a case. Other devices for getting voluntary control are often easier to use, since the effectiveness of using confusion depends upon considerable insight on the part of the case and, too, children are not happy when strong resistance is used about the face and in the mouth. Resisting the closure of the jaws with a rubber block has been invaluable in improving the valving of the lips.

In working with athetoids, observation of the nature and progression of involuntary motion gives important clues for their speech training. Three types of observation are used: (1) Observation during the resting or relaxed position; (2) observation during very simple activity; and (3) observation during attempts at complex activities. Essentially, these represent a scale of graded difficulty. Athetoid involvement of the face, tongue, and jaws can easily be overlooked if observation during the rest position alone is used.

When the athetoid shows relatively little or no involvement of the structures used in speaking during the resting state, the traditional training approach of progressing from the relaxed position through a series of more and more complex motor patterns and speech drills appears to be a productive one. Ordinarily, however, other techniques are indicated, one of the best being stabilization.

Stabilization is a process by which disturbing involuntary movements which interfere with finer muscle coordinations are blocked out. A physical therapist or occupational therapist may wish to improve the control of the fingers of a child, but find that the hands are so constantly in motion, due to involvement of the upper arms and shoulders, that the fingers are not in one position for long enough to attempt a movement. Bracing, weighting with sandbags, or just holding the shoulders are used to fix the disturbing members while the therapist works on the fingers.

In making decisions regarding the use of stabilization in the speech training, it is important to observe the foci and the direction of progression of an athetoid involvement. Although in some cases the involvement seems to be equal in all parts of the body, many cases will show a focus of greater involvement. It is always interesting to observe a case who is stripped to the waist to see if attempts to speak result in increased activity of the shoulders and arms, and also to see if purposeful activity of the hands and arms results in overflow activity to the neck and head.

When there is an interaction in the involvement of these parts, it is always worth while to explore the ef-

fects of restraining the shoulders, arms and head. The value of stabilization in the training should not be decided too quickly. The first reaction to the restraint is often to struggle against it, so the result is to set up more disturbance rather than to reduce it. After a satisfactory adjustment period, real advantages of the stabilization are frequently apparent. The amount of stabilization required is highly individual. Some cases must be held very firmly or tied down to a plynth while the head is strapped between steel bars or wooden blocks. Light sand bags or only moderate hand pressures are adequate in other cases. Many athetoids can be taught to stabilize themselves by assuming favorable postures in speaking situations. Interlacing the fingers of the two hands, grasping the arms of a chair, or resting the head against a high back of a chair may be sufficient restraint to reduce involuntary movement.

There are many goals to serve by stabilization. One is to block out a disturbing movement so that a case can have an opportunity to learn some of the patterns and adjustments of the speaking act. Even though the involuntary movements go on undiminished when the restraints are removed, the clarity of the speech is improved because of the learning that has taken place during the period of stabilization. It is always the hope that the degree of bracing can gradually be reduced without return of the involuntary movement. This does not always occur, but when it does, the gains are real.

Whenever possible, the case should be taught to stabilize himself as well as possible by using postural attitudes and available furniture. Although free speech in all situations is a desirable aim, it is realistic to have more modest goals. These people have in most cases suffered irreparable damage and partial successes must be accepted. The therapist who finds a few controlled situations in which the athetoid's speech is relatively more acceptable and discovers those in which successful speaking is unlikely can render an important service by making the case aware of the hazards and teaching him to make use of helpful, controllable details of his environment. In other words, close attention to motor aspects of speech training with cerebral palsied cases can get important results by making the cases 'smart operators' in social situations.

As has been inferred above, the principles of stabilization can be used with smaller parts of the body. Just as a larger movement of an arm can overwhelm or prevent the emergence of finger control, activity of the mandible can interfere with the development of specific control of the tongue. One way of blocking off the jaw in feeding training is to imbed in a rubber or plastic block which is held by the front teeth a straw through which a case is to suck liquids while in a prone position. The stabilized position of the mandible places the responsibility on the tongue, and tongue activity has a chance to emerge.

A different application of stabilization to the mandible is useful with the group of athetoids, who on almost any stimulation or attempted motion open their mouths very wide and thrust out their tongues. This facial posture is often automatically assumed during attempts at speech. The opening excursion of the mandible is ordinarily far beyond normal range of motion with the result that there is unusual sliding at the condyle. Quick and easy

closure of the mouth from this position is very difficult. Retraction and elevation of the tongue while the jaw is thus opened is almost impossible. A piece of equipment by which the mandible is definitely limited in its downward motion has been very useful. This device is a sling arrangement by which the mandible is fitted into a cup-like cradle which is strapped to a headband. Limiting the opening of the bite to what is an approximately normal free-way space breaks up the disturbing pattern and facilitates learning of useful lip, tongue, and jaw patterns.

The purpose of this article is to suggest the usefulness of giving careful attention to the use of motor training in speech therapy with cerebral palsied cases. Patterns do evolve incidentally to the functional approach to speech, but it is the observation of the writer that a detailed scrutiny of muscle activity and patterns of movement frequently reveals remediable deficits which interfere with the efficiency of the speaking act. The speech therapist has much to gain by making adaptations of the systematic evaluations, the equipment, and the muscle training techniques which have been so effectively developed by the medical consultants, the physical therapists, and the occupational therapists who have contributed so imaginatively to the rehabilitation of cerebral palsied persons.

An Exploratory Investigation Of The Self-Concept Of Stutterers

Fred E. Fiedler

Joseph M. Wepman

IMPETUS HAS BEEN given to the continuous search for understanding the personality structure of man by the development of new psychological techniques. One of the more promising of these is the Q-technique, a method of intercorrelation of persons, developed in England and brought to this country by Stephenson (*6*). One adaptation of it will be described here in some detail. It attempts to compare an individual's concept of himself with similar self-concepts of others. This is done by asking the subject to describe himself by sorting a series of descriptive statements. By quantifying the self-descriptions thus obtained it is possible to correlate one person's description of himself with that of others and thereby determine the degree to which different individuals are alike or different in terms of their perceptions and expectations of themselves and others. Some interesting insights into behavior and personality structure have been obtained by this technique, which has also opened a variety of other areas to more systematic investigation. It is proposed here that an investigation into the self-concept of stutterers might produce some valuable information concerning their personalities.

Theorists concerned with psychological classifications and description of the behavior of various types of psychiatric disorders have attempted to make stutterers fit into previously determined nosological groups. It was believed that some attempt to verify this *ad hoc* assumptive method might be useful. For example, the position of the classical psychoanalytical school as expressed by Fenichel (*1*) concerning stuttering is, '. . . [a] functional disorder of speech that [is] more than a simple inhibition . . . [a] typical example of the pregenital conversion neuroses.' Classifying the disorder further Fenichel states, ' . . . [it] has elements of both hysteria and compulsive neurotic traits . . . while the symptomatology is of the nature of conversion the patient's mental structure corresponds to that of the compulsion neurotics.' Coriat (*cited, 2*), another leading psychoanalyst, states it thus, 'Stuttering is a psychoneurosis caused by the persistence into later life of early pregenital oral nursing, oral sadistic and anal sadistic compo-

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nents.' Green *(cited, 2)*, late Director of the National Hospital for Speech Disorders, looked upon the stutterer as belonging to a 'stutter-type group' which is characterized by a basic tendency toward excitability and disorganization, an exaggerated capacity for response to stimuli and a relatively high potentiality for the spread of emotional tension. Fletcher *(cited, 2)*, Professor of Psychology at Tulane University, postulated that 'stuttering is a psychological difficulty . . . a morbidity of social consciousness, a hypersensitivity of social attitude, a pathological social response.' While Boome *(cited, 2)*, the assistant medical officer of the London County Council holds that the stutterer, ' . . . lacks confidence, is introverted and suffers from a sense of inadequacy.'

These few stated theories can be multiplied many times over—each is the reasoned opinion of the investigator—each demonstrates the tendency to look upon stutterers as being of one particular type. Beyond these and other expressed opinions it seems safe to say that stuttering is generally considered as being socially disruptive. The stuttering child, unlike some of the sufferers from other anomalies, such as blindness or deafness, is often subject to marked ridicule by his peers. Too often, as Johnson (*3*) has pointed out, the stutterer's parents have created a tension-producing problem by their attitudes toward the stutterer. During the early school years the stuttering child is frequently treated impatiently by his teachers and by other adults in his environment. All of these pressures during the formative years of the child create a condition that has logically been assumed, but never proven, to have a marked effect upon the individual's personality structure. From the handicapping nature of the symptom it is to be expected that the stutterer will view himself differently from the way in which the non-stutterer views himself. The hypothesis that there is a difference in the self-concept (and therefore probably also in the personality structure) of stutterers as compared with the self-concept of non-stutterers therefore seems very reasonable.

Procedure

An array of 76 statements descriptive of personality traits[1] was taken from Murray (*4*). These statements were typed on index cards and presented to the subject with the following instructions:

> Here are 76 statements which people have used to describe themselves. Please sort them into eight categories consisting of 1, 5, 12, 20, 20, 12, 5 and 1 statements. Place the statement which describes you best in the first pile, the five next most descriptive statements into the second pile, and so on until you come to the one statement which is *least* applicable to you. Be sure each category contains exactly the right number of statements.

It will be noticed that the subject is asked to force the statements into a predetermined normal distribution. Each statement is then assigned a score from one to eight corresponding to the category into which it has been placed. This permits the correlation of individual item scores for one subject with that of any other subject by means of the Pearson squared difference method formula (*5*).

Results

The subjects in this exploratory study were 10 adult male stutterers whose dysrhythmic speech had been

[1]Available on request from authors.

present since childhood and who were seeking treatment for their stuttering. A control group of six non-stutterers matched with the stuttering group for sex, age, socio-economic status and educational background were also asked to serve as subjects. Table 1 shows the correlation matrix which was obtained by intercorrelating the self-descriptions of 16 subjects.

Table 1 reveals that the intercorrelations in the stutterers' group range from –.21 to .43 with no trend to be noted. The median correlation for the stutterer group is only .12. Likewise, the median intercorrelations of the non-stutterer group is seen to be .14 and ranging from –.21 to .44. The median correlation between the two groups is .10. None of the differences between median correlations were found to be statistically significant. A graphic cluster analysis method developed by Tryon (7) also indicated no discernible clustering or sub-groups within or between stutterers or non-stutterers.

On the basis of these findings it must be concluded that stutterers' self-concepts cannot be differentiated, at least by means of this scale, from the self-concepts of non-stutterers. Since the stutterers were all patients earnestly seeking assistance it must be assumed that their efforts at producing reliable sortings were sincere. Barring the possibility that this array of statements is a poor assortment of traits for this purpose, it may be concluded on the basis of the data that stuttering does not affect the self-concept in any characteristic way. The data thus suggest one of two hypotheses; either the self-concept is formed prior to the onset of stuttering, that is, roughly before the third year of life, or that the stutterer is less aware of his symptom than was hitherto suspected.

Since the foregoing treatment of the data did not produce statistically

TABLE 1. Correlation matrix of self-descriptions of 10 stutterers and 6 non-stutterers*.

	Stutterers										*Non-Stutterers*					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	.19	.01	.04	–.21	–.15	.26	–.12	–.13	.19	–.05	–.08	–.16	–.24	.00	–.03
2		–.21	.18	.07	–.03	.10	–.11	.05	–.18	–.20	.10	.10	.05	.26	–.07
3			.12	–.09	.14	.05	.21	.28	.10	.06	.11	.02	.14	–.24	.20
4				.14	.04	.30	–.10	.19	.12	.06	.15	.20	.20	.16	.05
5					.20	.31	.12	.06	.07	.25	.14	.05	.19	.09	–.06
6						.16	.37	.25	–.03	.15	.13	.11	.03	.05	.25
7							.05	.24	.43	.12	.11	–.09	–.02	.11	.17
8								.22	.24	.09	.37	.31	.32	.09	.18
9									.16	.35	.17	.09	.11	.02	.31
10										.04	.03	–.10	.04	.21	.20
11											.12	–.21	–.19	.06	.24
12												.44	.31	.14	.26
13													.40	.10	.11
14														.04	.23
15															.21
16															

*Correlations are based on 76 statements, hence correlations of .23 or above are significant at the 5% level; correlations of .30 or above are significant at the 1% level.

TABLE 2. Correlations between self-concepts of 10 stutterers, 13 mental hygiene patients, and 13 clinical psychologists.

Groups	*r*
Stutterers with psychologists	.54*
Stutterers with patients	.38
Psychologists with patients	.50

*While conventional significance tests for *r* would indicate whether a similar difference would be found for the same persons on a number of items similar to those used, no significance test has been developed to indicate how Q-correlations would vary with further samples of subjects.

significant correlations, a variation of the technique was attempted. This entailed the preparation of a composite scale for the particular stuttering group and comparing it with similar composite scales from other groups. The composite scale was constructed by summing the scores for each of the 76 items obtained from the stuttering group. The mean for each item was then computed. A similar composite scale was made for a group consisting of 13 mental hygiene clinic patients and as a control group a scale was derived from the self-sortings of 13 clinical psychologists. None of the members of the last two groups were stutterers, either past or present.

The intercorrelations obtained by the previously mentioned Pearson method are shown in Table 2. As a group, the self-concept of stutterers appears to resemble more closely that of the clinical psychologists (a theoretically well-adjusted group) than it resembles the self-concept of the mental hygiene patient group (a theoretically maladjusted group). The inference can then be drawn that the stutterer looks upon himself as being less maladjusted than the patients commonly seen in a mental hygiene clinic. A word of caution in the interpretation of these data must be entered. These groups were not matched in terms of socio-economic or educational backgrounds. Also the data are artificially magnified by the process of producing the composite scale of mean scores per item, and applicable significance tests are not yet available.

From this exploration of the self-concept in stuttering adults it appears that one of two inferences can be drawn. Either stuttering, even though it appears during the early formative years of life, does not have as disruptive a force on the personality development as had been previously assumed, or the self-concept is formed prior to the formation of the stuttering symptom. From the data collected it does not seem justifiable to group all stutterers together into one nosological group unless very abstruse and artificial means are used for the grouping process. It is suggested from this initial investigation that a broadly conceived research program into the personality dynamics of stutterers along new lines is indicated rather than following previous assumptions and theoretical concepts.

Summary and Conclusions

An exploratory study utilizing the Q-technique for the investigation of the self-concepts of stutterers and non-stutterers is reported. The widely accepted but unverified assumption that the existence of stuttering is a socially handicapping pattern of behavior was pointed out, as was the widespread tendency for theorists of different schools to look upon stutterers as belonging to particular psychia-

tric groups. The Q-technique, a method of intercorrelation between persons which is now being used in experimental psychology, was adapted to an investigation of the self-concept of the stuttering adult. The technique was described and the data obtained were given. The data were used to test the hypothesis that since stuttering is held to be a socially handicapping disorder it causes the stutterer to hold a characteristic picture of himself which is different from that held by the non-stutterer.

The results of the study indicate that the hypothesis cannot be supported; the stutterer's self-concept showed no characteristic difference from that of the non-stutterer. A factor analysis of the data (a usual step in the Q-technique) was deemed unnecessary in view of the low correlations. A cluster analysis of the data by Tryon's method yielded no results.

To explore the situation further a composite scale of self-concepts was constructed for the stutterers' group and compared with similar scales for two other non-stutterers' groups. It was found that stutterers as a group appear to look upon themselves as being more like a group of psychologists than they did like a group of mental hygiene clinic patients. Because of the artificiality of the composite scales this interpretation is only tentatively advanced.

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Otologic Applications Of Audiology

R. E. Jordan

OTOLOGY IS A BRANCH of medicine which deals with disorders of the ear. The major portion of the problems confronting the otologist is confined within the temporal bone. Audiology is a new specialty whose borders of activity are as yet not well enough defined to be circumscribed by definition. The term audiologist as used in this presentation is restricted to those persons who have had extensive training, specialization, and experience in dealing with hearing and hearing loss in individuals. Since the otologist also deals with hearing and hearing loss, both special fields have a common basic problem. Working together and pooling their respective views, these two specialties should increase the rate of advancement in problems of hearing and hearing loss. Why has there been a delay in the proper coordination of these two special fields?

Part of the answer may be in the fact that audiology originated in the college and not the medical school. When audiology was still in its embryonic stage the most fruitful source of audiologists was the college speech clinic, now renamed speech and hearing clinic. The primary function of these clinics was the training of students and not the treatment of patients. Patients were rehabilitated in these clinics, but the basic philosophy remained that of training and not treating. Little attention was given to the pathology present, perhaps because that information was not readily available. Diagnostic comparisons between hearing loss and diseased states often were not accomplished. Audiologists emerging from such a background could see little need for close association with otology. In addition, some audiologists received their early training in military audiologic centers, where the over-all direction of the program was nominally under a medical officer, but where the true guidance and direction often came from the audiologist. These individuals came to regard the otologist as a necessary military evil, but one which could well be dispensed with in the civilian picture. What the audiologist did not see clearly was the atypical case load which went through the military hearing centers, a load which had already been screened otologically.

Clinical audiologists are still being trained in speech and hearing departments of universities where contact with otology and other branches of medicine is conspicuous by its absence, or at best is merely occasional. These individuals do not have the opportunity to observe the otologists and audiologists working together.

The audiologist, however, is not entirely to blame for this improper recognition. The medical profession must accept the major portion of the blame for the delay in proper coordination of these two fields. Except for

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a few far-sighted men such as Fowler, Goldstein, Day, and others, otologists as a whole failed to realize the diagnostic and therapeutic potentials of this hybrid specialty, audiology. Hearing loss was a medical or surgical problem. When routine treatment failed, nothing more could be done. The number of teeth, tonsils and nasal septums removed for the treatment of otosclerosis is an excellent example of the medical approach to hearing loss. There are some otologists who consider the audiologist a technician, whose job it is to carry out audiometric testing and 'fit' hearing aids. Others consider audiology as a dumping ground for undesirable hard of hearing patients. Unfortunately, there are still physicians practicing otology who have no knowledge of audiology.

Audiology is now at a stage of development where it functions best in close cooperation with the medical profession. It is not sufficient to have a peripheral relationship between audiology and the medical profession. Merely occasional contact between the two will not serve the hard of hearing patient as he needs to be served. The audiologist must be a full member of the team along with the roentgenologist, the neurologist, the rhinologist and the other specialists called upon to aid in the diagnosis of otologic problems. He should be a colleague on the diagnostic and therapeutic team and not a manipulator of admittedly complex equipment.

Fortunately, steps are being taken to educate both members of this potential team, although it is a slow process. The leading audiologic training centers are providing increasing contacts for their students with the otologist. Conversely, the graduate training centers for otologists are including many phases of audiology in their curriculum. Practicing otologists are given opportunity to visit and participate in seminars in audiologic clinics.

The Department of Audiology at the University of Pittsburgh is an example of an organization patterned after these lines. The department is housed within the Eye and Ear Hospital and comprises some 12 rooms, including offices, training rooms, and two double suites of sound-insulated testing rooms. The equipment was constructed to specifications by individuals experienced in psycho-acoustic instrumentation. Although housed in the Eye and Ear Hospital, the department retains its autonomy and is a joint function of the School of Medicine and the College of the University of Pittsburgh. The audiologic staff has faculty rank in the School of Medicine and gives lectures to undergraduate medical students. The director of the department is an audiologist. His staff consists of individuals trained in teaching of the deaf and in audiologic procedures. The medical director is the professor of otology and chief of the otologic service of the Eye and Ear Hospital. Under him is the otologic staff of the hospital. At the University of Pittsburgh, Otology and Rhinolaryngology are separate departments each headed by a full professor. The consulting staff of the hospital is available for assistance in such diverse areas as psychology, psychiatry, and plastic surgery.

The majority of patients seen in the department of audiology are referred by otologists, so that information about the physical condition of the patient is available to the audiologist. Those patients referred by institutions or social agencies are handled in the

following manner: The majority of these patients are given appointments on Wednesday morning at which time a member of the otologic staff is on duty to examine the patient. Upon completion of all testing, the otologist and the audiologist discuss the problem with the patient. Those patients not taken care of on Wednesday are seen by the resident on the otologic service and a similar routine is followed.

One hour of the third Wednesday of each month is devoted to a joint meeting of the otologic and audiologic staff with presentation of cases and coordination of findings.

Probably the most frequent type of referral is the patient with otosclerosis. The fenestration operation for

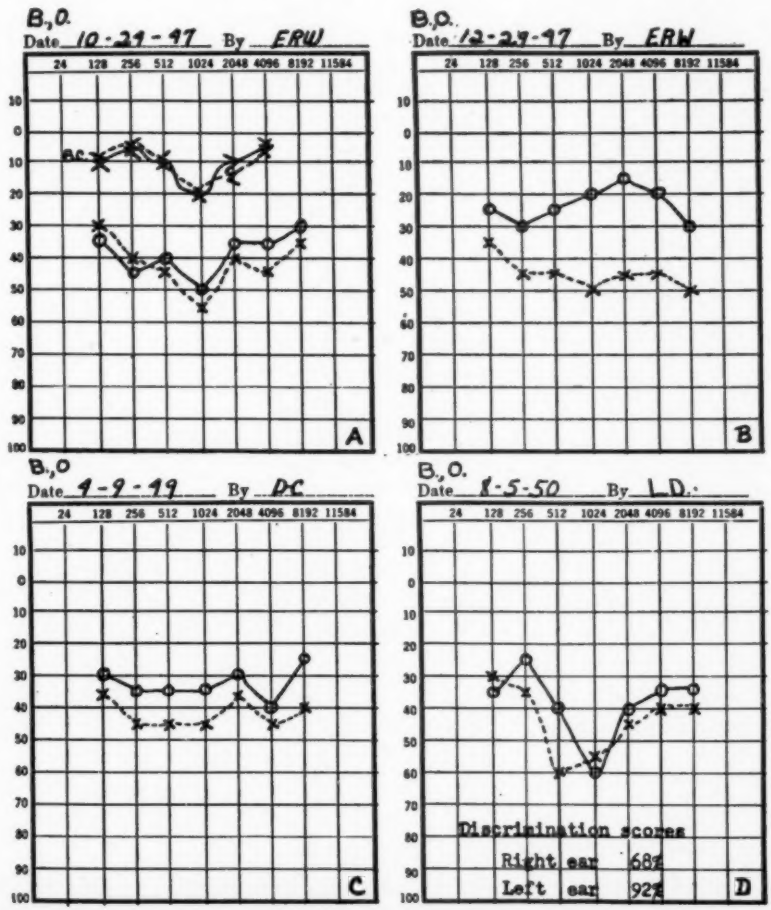

FIGURE 1. Audiograms of a fenestrated case which failed. A, preoperative; B, second month postoperative; C, eighteenth month postoperative; D, twenty-second month postoperative.

clinical otosclerosis is now an accepted surgical procedure. The technique is somewhat standardized and results are usually favorable providing the case is suitable for this procedure. There still remains the real problem of proper selection of cases. All cases of otosclerosis which might be suitable for fenestration surgery have a complete audiologic study before surgery is done or often before it is contemplated. The audiologist's report provides three things: (1) Information concerning the cochlear reserve as determined by the discrimination score, (2) recommendation of the most suitable ear for operation as indicated by the better discrimination score, and (3) a check on the otologist's audiometric and tuning fork tests. Formerly it has been customary to operate the ear with the greatest hearing loss. Some of these cases were technically successful but failed to reach the practical level. The audiologist is relied upon to prevent this type of case from coming to surgery.

Another situation where audiology can help is in the fenestrated case which failed. Figure 1A shows the preoperative hearing level of such a case. Figure 1B shows the second month postoperative level, indicating a fair result from the surgery. Figure 1C, taken 18 months later, indicates a definite failure. The decision to be made was whether a revision should be attempted, the other ear fenestrated, or the patient advised to get a hearing aid. In this case the decision was made by the audiologist. The discrimination score of the operated ear was too low to indicate revision (Figure 1D). The risk of operating the remaining ear with such a low discrimination in the opposite ear was too great and the patient was advised to get a hearing aid.

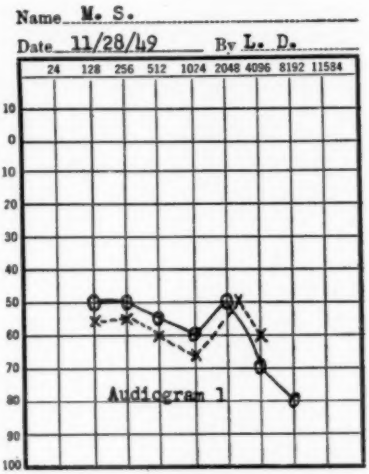

FIGURE 2. Report from Department of Audiology on a case of bilateral Meniere's disease.

Another interesting patient who was aided directly by audiology is a case of bilateral Meniere's disease with a marked bilateral pure tone hearing loss and violent attacks of vertigo. Under treatment the vertigo subsided but the hearing did not improve. This patient was 67 years old and gave a history of hearing loss for 25 years, more marked with the onset of vertiginous attacks. There seemed little hope for any benefit from a hearing aid since the discrimination in Meniere's disease is usually lower than pure tone tests would indicate. The patient was referred to audiology, however, and the report included the audiogram shown in Figure 2 and the following:

Hearing for speech re normal threshold.
Right ear: 56 db
Left ear: 59 db
Binaural: 58 db

Discrimination scores. Recorded
Right ear: 74%
Left ear: 24%

Live voice
Right ear: 94%
Left ear: 38%

She is now wearing a hearing aid quite successfully. It is the author's opinion that the relief of tension created by her hearing loss has made it much easier to control her vertiginous attacks. Otologists sincerely hope, it can be added parenthetically, that further research into the recruitment phenomenon may provide a means of differentiating early 8th nerve tumors from Meniere's disease.

Another example of team work, taken from the field of psychogenic hearing loss, is a young man who had a long history of chronic mastoid in-

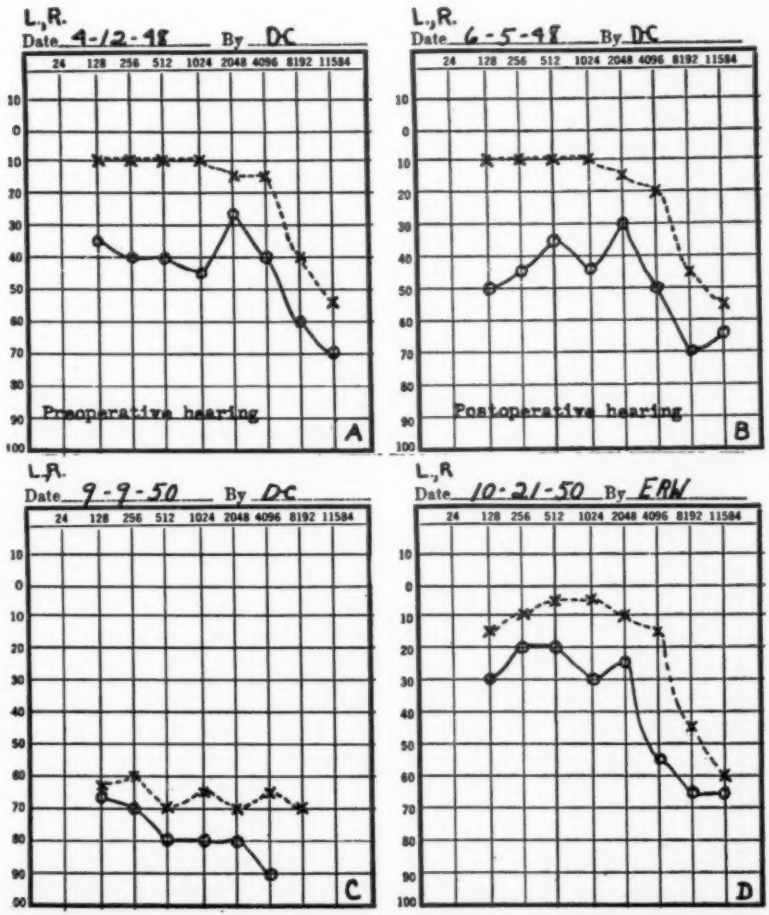

FIGURE 3. Audiograms of a case of psychogenic hearing loss. A, before mastoidectomy; B, after mastoidectomy; C, two years later: functional change in hearing, bilateral; D, two months later, following mild psychotherapy.

fection involving the right ear. The condition was corrected by modified radical mastoid surgery with retention of fair hearing as indicated in Figure 3A and B. Two years later, during a routine office check, the patient stated he had become hard of hearing shortly after returning from his honeymoon. Audiograms (Figure 3C) showed a marked hearing loss bilaterally. The history of the onset and knowledge of the temperament of the patient made the diagnosis obvious. After mild psychotherapy the hearing returned to its former level (Figure 3D).

This type of case is not difficult to diagnose. The real problem to the otologist is the case of suspected psychogenic hearing loss which has some pathology in both ears and on which there is no previous record. Such a case is that of a young man who complained of bilateral discharging ears with hearing loss. Pure-tone audiometry indicated a rather severe loss in both ears. It was impossible to ascertain from physical examination whether the hearing loss fitted the pathology found. The patient was sent to audiology and the audiogram shown in Figure 4 was obtained, along with the following:

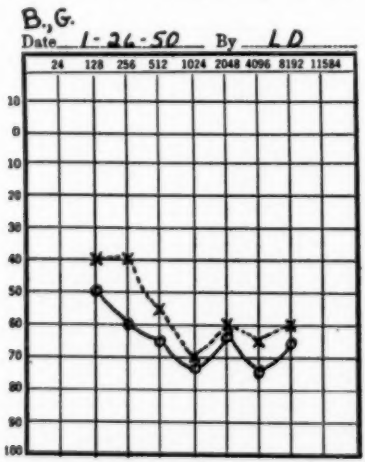

FIGURE 4. Report from Department of Audiology on a case with bilateral ear pathology and suspected psychogenic hearing loss.

Hearing for speech re normal threshold.
Right ear: 49 db
Left ear: 39 db
Binaural: 31 db

Articulation scores.
Right ear: 94%
Left ear: 98%

Doerfler-Stewart ratio: +4

It is apparent that a certain portion of this patient's hearing loss was psychogenic and otologic treatment alone would not have been sufficient to restore this patient's hearing to its best possible level.

These examples show how the otologist and the audiologist need to depend upon each other for aid and guidance in the management of patients with hearing problems. The audiologist can function more efficiently as a full member of a diagnostic and therapeutic team. If the audiologist accepts membership in this team, he must assume additional responsibilities. No longer is he a dial twister, barricaded behind complex instruments, observing and recording the patient's hearing loss. As a member of the team which practices the art of healing, he must assume his share of the responsibility for the advice and guidance given the patient.

In our experience, audiology has filled an important gap in the handling of the hard of hearing patient. We now have much needed help not only in diagnosis but also in carrying our patients through the complete range of therapy. The concept of healing the

aurally handicapped individual has been broadened beyond medical and surgical boundaries. It is apparent that as a result of this close association which now exists through the University of Pittsburgh Eye and Ear Hospital, the otologist is not limited in his therapy, the audiologist has found his true role in medicine and, above all, the hard of hearing individual receives the maximum benefit which can be achieved.

Special Techniques In Testing The Hearing Of Children

William G. Hardy
John E. Bordley

A MEANS FOR accurate testing of the hearing of infants and young children under four years of age has long been sought. It is needed for differential diagnosis by the pediatrician, the otologist and the psychiatrist, and as a basis for clinical procedures and educative guidance by the audiologist and the teacher. Somewhere in the middle, in terms of need, is the parent, whose behavior, attitudes, and beliefs about a child's normalcy or abnormalcy are usually important determinants of his welfare and happiness.

Objectives

Out of a welter of clinical and institutional practices and experiences regarding auditory tests for the young child, a few guide-lines have emerged: (1) Tests should be done with auditory stimuli of known values of both frequency and intensity; (2) a better approach to the thresholds of acuity is usually achieved when the test-signals are meaningful to the child; and (3) inasmuch as most children with impaired hearing are not totally deaf, the point of clinical testing is not to determine whether a child hears something, but to determine the function of the auditory mechanism and the status of hearing for certain specified ranges and intensities of sound, discrete or complex. If the job is done adequately to satisfy both medical and nonmedical requirements for diagnosis, training and education, it involves much more than a black-and-white distinction between hearing and not-hearing.

Such a distinction has long been maintained as a useful device in special education, and the terms *deaf* and *hard of hearing* are loosely applied according to whether or not the hearing impairment has precluded the development of language. Fundamental to any work in special education, however, are the problems of diagnosis and clinical therapy. The clinician meets a variety of problems in differential diagnosis: How much impairment exists as a sequel to infection? How much recovery may be expected by specific surgical or clinical procedures? What is the etiology? Impaired hearing or dysphasia? Feeblemindedness? What is the relation between developmental retardation and impaired hearing? Is the impairment limited to the end-organ or does it involve the central mechanism? How much residual hear-

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ing is there? These are typical clinical questions whose answers are determinable in part by the accurate measurement of auditory acuity.

In order that both clinician and educator may interpret and treat and predict with professional assurance, hearing tests for infants and young children must be reasonably accurate and must present descriptively significant and useful facts, in terms of known patterns of otic pathology, psychoacoustic performance and dynamic behavior. Unfortunately, most techniques for testing this group of children do not provide this sort of detail, even within the restricted limits of interpretable facts about audition.

Gross Reflexes and Learned Responses

Without question, some of the classical techniques, based upon the observation of palpebral reflexes, head-turning toward the source of sound, and the like, provide some useful information; and, with the use of meaningful sounds in controlled circumstances, a careful test-team can learn something. Froeschels and Beebe, among others, report significant findings on very tiny infants (*9*). By and large, however, all such testing fails to measure auditory acuity or sensitivity with sufficient refinement; it is rather much an open-or-shut matter without quantification.

The use of calibrated whistles or the pure-tone audiometer, together with the idea of the conditioned (learned) response, has proved to be more useful and accurate. Various forms of the method have been developed and used by Ewing (*6*, *7*), Froeschels and Beebe (*8*, *9*), Macfarlan (*14*), Guilder and Hopkins (*10*) and others, all of which have been epitomized recently by Utley (*22*). The child is trained by various techniques, usually involving a system of rewards, to respond to auditory signals of known frequency and intensity. The rationale is that as the learned response persists the child will react appropriately to stimuli of less and less intensity, and thus an approach toward a threshold of acuity is made.

Perhaps the most refined technique of this order is that developed by Dix and Hallpike, labelled 'the peep-show' (*4*). The child is seated or held in front of a picture-frame structure, equipped with light, a push-button or trip-plate, and an audiometric output from a loudspeaker; he learns that when he perceives a tone and pushes the button, an attractive picture is illuminated. The circuit is arranged so that the picture cannot appear unless a tone has been presented. Initial test-tones are presented at high intensities, and attenuation is introduced in fairly large steps until the child no longer responds. The investigators report that the technique requires only about 15 minutes for a six-octave range. There are a good many problems relative to the use of pure tones in a free field that remain to be solved, but there seems little question about the usefulness of this technique in achieving in a short time what otherwise involves long and painstaking procedures, and various clinicians report satisfaction with it.

Another variation of this sort of conditioning may work quite well with children from three to six years old who have developed some language and speech. Bloomer, Keaster and others have developed means of employing speech audiometry (*1*, *11*, *17*). Pictures or toys representing

verbal concepts within the child's vocabulary are used; the child is urged to point out or pick up the appropriate card or toy by name; care is taken that he gets the cue by auditory stimulus alone, and the intensity with which the cues are presented is gradually diminished until he no longer responds appropriately. This scheme works best with a high-fidelity output from a loudspeaker and with suitable attenuation; it is doubtful that speech-hearing threshold can be measured accurately with a three-year-old by this method, but a good estimate of the speech-hearing function can often be made.

At best, however, all such audiometry requires the co-operation and active participation of the child. None of these techniques has proved workable on children under the age of three years and often they are of dubious value with children under the age of four; some require long hours of training; all are subject to the variables of interest, attention-span, and reaction-time; few are adapted to the needs of a large patient-load; and the attainment of threshold-values comparable with those obtained in routine audiometry is problematical. The requirement is a test of auditory acuity that is reasonably free from these limitations and is, in this sense, more objective.

Other Bio-Physical Measurements

With this idea, a variety of biologic or bio-physical functions may be utilized for observation and measurement—changes in the action of the heart or of respiration, fine-muscle changes, eye-activity, autonomic responses and others. Kobrak and his associates have been working with direct observation of changes of the tensors in the middle ear (*13*). The Wever-Bray technique for deriving cochlear potentials is, of course, basic in the study of the neurophysiology of the auditory mechanism, but is as yet not available in a clinical situation. With the criteria outlined above in mind, however, it must be observed that with present instrumentation and knowledge the use of most of these biologic functions falls short in performance.

Within the past few years, considerable experimental work has been done with the use of electroencephalographic and of psychogalvanometric measurement. Michels and Randt used a standard electroencephalograph to record galvanic skin responses to stimuli from an audiometer and tuning forks (*16*). They were concerned with the diagnosis of psychogenic hearing impairment. Their findings indicate that their technique is limited to frequencies of 1000 and 2000 cycles per second, and to intensities at least as great as 60 decibels (with reference to commercial audiometric calibration). This work has been continued with adults by Doerfler (*5*) and Knapp and Gold (*12*), among others. The technique does not involve any consistent attempt to condition the subject (the use of a light as a warning signal is reported by Doerfler, but galvanic responses were not consistent), and, although initial responses are sharp, it has proved difficult to establish responses in an approach to threshold measurements. What happens is that the sympathetic nervous system mediates the responses to pure-tone stimuli and produces a change in the electrical potential of the skin between the two points under the electrodes; this is a function of electro-motive force in the body, and is called the Tarchanow effect. The body rapidly adapts to

overt stimuli, however, and consequently, with rapidly successive stimuli (like pure tones), the change in electrical potential very soon diminishes to a point at which measurement is extremely difficult. Despite this, Knapp and Gold report that the technique is effective in about 90 per cent of their adult cases suspected of malingering or some other sort of psychogenic involvement.

More recently, Marcus, Gibbs and Gibbs have experimented with the 'arousal response' recorded by electroencephalography (*15*). They were unable to use pure-tone stimuli either from an audiometer or from tuning forks, and have worked with cowbells, tom-toms and the like to provide an intense, frightening sound-stimulus. They have been able to evoke an arousal-response, recorded by measuring changes in brain-waves during sleep, and conclude that the method is useful in testing the auditory function. Certainly the experimenters have demonstrated that their technique differentiates between the presence and absence of hearing, but there is as yet no evidence that it makes possible the measurement of hearing loss in any refined fashion. It is to be hoped that further experimentation will make such measurement possible.

Without question, the general idea of testing auditory function by the measurement of skin-resistance changes has considerable merit. Some of the phenomena of these changes have been known since Féré's work in 1888, and techniques of measuring these changes have been developed extensively in the past 25 years to record and study a variety of psychobiologic functions. It has been demonstrated that these measurements may be used fairly consistently to test the function of the auditory end-organ, when adequate conditioning is employed in conjunction with what is called the 'Féré effect' (*2, 3*).

Psychogalvanic Skin Resistance Audiometry

In the fall of 1947, experiments were begun at the Johns Hopkins University School of Medicine to develop a technique applicable to clinical requirements, whereby threshold audiometric measurements might be obtained with infants and very young children. The method employs the well-known 'ascending technique' in audiometry together with the Féré effect and a modified form of Pavlovian conditioning. The basic psychogalvanic instrumentation employed is that developed and used for many years by Richter in the Phipps Psychobiologic Laboratory (*18, 21*). The means of achieving a suitable conditioning technique grew out of experimentation with a variety of stimuli, after extensive consultation with specialists in pediatrics, psychiatry and psychobiology.

Richter has worked with the phenomena of skin-resistance changes for more than 25 years, and has used a particular circuit for the past 10 years. With his apparatus he has demonstrated skin-resistance changes in a variety of normal and pathologic states following such external stimuli as pinpricks, strong light and mild faradic shock. The authors experimented with a variety of conditioning stimuli, and found that a mild shock produced the most consistent conditioning. The idea is that, with the use of a pure tone as a warning signal a few seconds before the shock is given, a child can be conditioned so that significant skin-resistance changes are developed following the tone in anticipation of the shock.

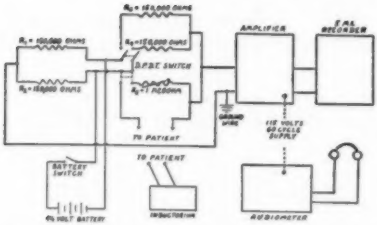

FIGURE 1. Schematic drawing of the circuit used for obtaining the Féré effect in galvanic skin-resistance audiometry, together with the layout of the equipment.

Various specialists in children's problems were consulted and all agreed that this situation should not produce a traumatizing situation; this has proved true.

Equipment. Figure 1 is a schematic drawing of the equipment used in the technique, with special attention to the circuit employed for working with the Féré effect.[1] This circuit is relatively simple and easy to maintain in operation. The component parts are standardized and readily obtainable. The basic equipment consists of the following units:

1. A modified Wheatstone bridge housed in a metal box and supplied by a 4½-volt dry battery.

2. A General Radio, Type 715-A, Direct Current Amplifier which operates on a 110-volt, 60-cycle A.C. supply.

3. An Esterline-Angus, Model AW, O-5 milliampere ink recorder.

4. A Harvard Inductorium, activated by a 4½-volt dry battery and housed in a metal box.

5. Two pairs of polished zinc or solder electrodes, thin, about ¾-inch diameter, with 6-foot leads.

6. A paste made of kaolin in a saturated solution of zinc sulfate.

7. Gauze and adhesive tape for fastening the electrodes in place.

8. A standard audiometer, preferably one with binaural headphones.

The key to measurement with the Féré effect is the bridge. It is designed so that when the double-pole-double-throw switch is in the 'zero' position, the four arms of the bridge (each with a resistance of 150,000 ohms) are in balance so that the entire circuit from the bridge through the amplifier to the recorder can be calibrated. A center-point calibration on the O-5 milliampere scale is used so that both positive and negative changes in current are recorded when the subject is in the circuit. The value of 150,000 ohms is useful because it approximates average-normal skin resistance at the points where the electrodes are fastened. When the switch is thrown to the 'test' position, two of the 150,000-ohm resistors are replaced, one by the patient, the other by two potentiometers (one a megohm; the other 100,000 ohms) connected in parallel for coarse and fine adjustments to rebalance the bridge during use.

When the subject is included in the circuit, a small current is induced in the field between the pick-up electrodes (that is, between the two points of contact with the subject's skin). This induced current varies between 2 and 20 microamperes, not enough in itself to effect the subject's skin resistance. A higher voltage-supply to the bridge would increase this induced current; a stronger current has not been found necessary, although 50-60 microamperes is often used in this same circuit for other psychobiologic measurements. The use of this induced current makes the princi-

[1]This is an adaptation of the work of Richter and Whelan (*21*), which is reproduced here with the permission of the authors.

pal difference between the Féré effect and the Tarchanow effect and, together with the use of Pavlovian conditioning, makes reasonably reliable pure-tone audiometry possible. Michels and Randt, Doerfler, Knapp and Gold and others have evidently been using the Tarchanow effect (without additional conditioning) — which measures changes in electrical potentials as a function of the activity of the sympathetic nervous system—and found it relatively difficult to apply to audiometric requirements. The Féré effect, on the other hand, measures changes in the resistance of the skin under the electrodes to the induced current, and has been found to be a reasonably stable and useful source of information about what is going on in the test-situation.

Technique. What happens in this use of the Féré effect is that stimulation of the sympathetic nervous system (internally by 'thinking' or 'reacting emotionally'; externally by the application of a pinprick, a mild shock, a light, a sound, and the like) increases the activity of the sweat glands; increased saline in the skin under the electrodes causes a lowering of the resistance of the skin and therefore a change in the currents in the bridge; in due time (about 15 seconds on the average) the resistance of the skin returns to normal (*19*, *20*). These changes in the bridge-currents are amplified and recorded in wave-form, and can be interpreted as positive or negative responses to the stimuli.

Pick-up from the palmar and dorsal surfaces of the hands and feet has proved to be consistently good; the palms of the hands and the soles of the feet usually perspire freely. Pick-up from the ends of the fingers has been found even better in many instances, and the authors use these points of contact whenever it is feasible. A paste made of kaolin mixed in a saturated solution of zinc sulfate is used to coat the electrodes (for both pick-up and shock) on the surface in contact with the skin, and each electrode is held in place by adhesive tape over a layer of gauze. It is necessary that a reasonably constant pressure of the electrodes be maintained at all times. For the hands and for the feet of infants and very young children, ¾-inch electrodes are used, and ⅜-inch electrodes for the finger-tips. The shock electrodes are ¾-inch, and are fastened to the soft tissue on the calf of the leg. The pick-up electrodes are fastened opposite each other on the palmar and dorsal surfaces of either hand or foot; the shock electrodes are fastened about an inch apart on the same leg. The leads can be made of ordinary service-cord or any other well-insulated stranded connecting or antenna wire.

Infants under test are held in the lap; two- and three-year-olds usually sit in a highchair; older children sit in a rocking-chair or arm-chair. Two persons compose the test-team; one works with the equipment, the other with the child. In testing tiny children, one headphone from the audiometer is held securely in place against the ear under test; binaural phones are used with children who will tolerate their weight and pressure. In working with children older than about 18 months, the child's attention is held with appropriate toys (block, puzzles, a drawing-board, and the like) during the test. The need for a two-man team, both of whom are thoroughly acquainted with all aspects of the procedure, cannot be overemphasized. The idea of this technique is simple; the execution is not.

The core of the situation is the conditioning process. The audio signals are presented from a standard audiometer. A fairly short burst of the test-tone (usually beginning with a 500-cycle tone at high intensity) is followed in about three seconds by a mild faradic shock from the Inductorium. The shock has a very low voltage; beginning at a sub-threshold level the voltage is increased until a suitable galvanic reaction is recorded. Under ordinary circumstances, about 8 to 12 of the combined signals, tone and shock, are necessary to set up a conditioned-reflex arc. At least 15 seconds should elapse between the pairs of signals (exactly how much time is necessary must be determined by observation of the particular individual; responses of the sympathetic nervous system vary a great deal from person to person). With this instrumentation, there is a time-lag between the sound-stimulus and the sympathetic response which varies from about one-half to one second; allowance must be made for this in the technique of presenting the signals.

In short, the child is conditioned to respond to the test-tone in anticipation of the shock. The shock annoys but it does not hurt; it startles but it does not traumatize. Once the child is conditioned, standard 'ascending' audiometric technique is used, the responses being indicated by definite waveforms on the recording apparatus. Threshold is determined by crossing and recrossing the point at which the least intensity elicits a positive response of the sympathetic nervous system, as this response has been defined. The state of conditioning is maintained by reinforcement with the shock when and as the tester deems it necessary.

Scope. To date, over a thousand tests have been carried out on subjects in an age range from four months to adulthood. Over 650 tests have been done on preschool-age children. In the early experimental process, the technique was first employed with adults and older children with normal hearing, then with those from these groups with known hearing impairment. The technique has proved to be simple and precise for most adults suspected of malingering or of various psychogenic involvements.[2] To date, the youngest child taken through this procedure was four months old; a sharp audiometric pattern was obtained that is quite consistent with other facts about the case. Skin-resistance responses have been obtained from infants as young as three weeks, and, as the inquiry continues, it may prove possible to test some of these tiny infants. Various diseases or details of maldevelopment may produce aberrant effects in the sympathetic nervous system and thus effect the basic mode of measurement. Particular problems are encountered in working with cerebral palsied children. Unilateral hearing impairment poses no unusual problems; the method works quite well with opposite-ear masking.

Prior to the test by skin-resistance measurement, each child is worked up by more accustomed means. This involves a complete otologic examination, a full medical history, a psychosocial appraisal, and extensive observation of the child's reactions to ordinary environmental sounds. An attempt is then made to test gross responses to speech and noise at meas-

[2]Serious problems are encountered, however, in work with hysterics; some of the reasons for aberrant responses are under study.

TABLE 1. Comparison with children (59 ears) between standard and galvanic skin-resistance audiometry for four test-tones. Age-range, 4-18 years; mean age, 8.1 years.

	500 cps	*1000 cps*	*2000 cps*	*4000 cps*
Variance of mean	3.22	3.75	3.06	3.77
Standard deviation	4.66	5.19	3.98	3.69
Differential range of 5 db. or less	67%	61%	73%	43%

ured intensity and frequency, and to pure tones presented from a loudspeaker in a soundproofed room. This is the stage at which the differentiation between hearing and not-hearing may be made, provided that the test equipment is adequate.

Reliability. A good many questions about performance and reliability naturally come to mind. For the past 18 months, we have not kept track of performance with normal subjects; under ordinary circumstances the comparative thresholds obtained with this method and with routine audiometry typically lie within a 5-decibel range with adults and children of school-age. Occasionally, when the facts warrant, an adult with otic pathology is tested by both methods; for the most part, however, the use of the special technique with adults is limited to those suspected of some psychogenic involvement. Many of the children, on the other hand, present symptoms that warrant medical and/or surgical treatment, and it takes a long time to get a large patient-load back for test-retest inquiry after all otic symptoms have been brought under control. Over a period of time, however, some limited amount of data has been accumulated on children and adults with otic pathology.

Table 1 presents statistical findings on a group of children in an age-range from 4 to 18 years, who have been tested by standard and skin-resistance audiometry. There were 34 children in this group; both ears were not tested in several instances. For the most part, the tests were made on the same day and with the same audiometer; for clinical reasons, there were a few exceptions to this. The 'variance of the mean' or 'mean deviation' is calculated by adding the various means for each of the tones in the two tests and dividing by the number of subjects. For this group the differential range was as great as 20 decibels (it will be kept in mind that all these children have impaired hearing; some of them are severely or profoundly impaired), which accounts for the relatively high standard deviations. Of more significance, perhaps, is the fact that for the three tones from 500 through 2000 cycles the great majority of range-differences were 5 decibels or less. Only about half this group showed evidence of residual hearing at 4000 cycles. These facts are particularly significant for the clinician interested in diagnosis and prognosis.

TABLE 2. Comparison with adults (30 ears) between standard and galvanic skin-resistance audiometry for four test-tones.

	500 cps	*1000 cps*	*2000 cps*	*4000 cps*
Variance of mean	3.41	2.66	1.50	2.36
Standard deviation	4.01	4.70	5.84	4.00
Differential range of 5 db. or less	73%	70%	60%	62%

Table 2 presents some data on a group of adults with hearing impairments of various degrees. There were 20 subjects in this group, and all these tests were done on the same day. It will be noted that, according to the mean deviation, the 2000-cycle tone appears to be the most stable; this despite the fact that the standard deviation for this tone is highest in this group. Here, again, it is worth observing that, for all tones, 60 per cent or more varied only 5 decibels or less in the comparison between the two kinds of tests.

Table 3 is perhaps most meaningful in statistical terms. This represents test-retest by skin-resistance audiometry with a group of 49 children. There was a lapse of four to 17 months between the two tests in the various cases. Two different audiometers were used, but both were maintained in careful calibration and instrumental differences should be negligible. Three different testers were involved. A few of these children received otologic treatment in the interim between tests, but for minimal symptoms. There was a spread in differential range as great as 25 decibels; 80 per cent of the group varied 10 decibels or less for the various tones, and, for every tone, significantly more than half the group varied only 5 decibels or less. Considering the age-range of the group, and the fact that the mean age includes the interval between the two tests, one may conclude that these findings are significant in terms of reliability and clinical usefulness.

TABLE 3. Test-retest comparison with children (86 ears) for four test-tones with galvanic skin-resistance audiometry. Age-range, 1-9 years; mean age, 3.7 years.

	500 cps	*1000 cps*	*2000 cps*	*4000 cps*
Variance of mean	3.72	2.44	1.97	2.81
Standard deviation	5.21	5.23	4.27	4.58
Differential range of 5 db. or less	62%	52%	55%	62%

Discussion

A great deal more needs to be known, and much more discussed, about the modalities involved in skin-resistance audiometry with the Féré effect. Many neurophysiologic details are now under study, and there are many problems relating to its use in the day-by-day clinical job of handling a varied case-load. Children, well or ill, offer a challenging variety of attitudes and predilections. The technique described here is relatively simple to use with most one- and two-year-olds; the child aged four or five may be difficult to handle. No physical restraint is used; yet appropriate sedation is not yet available. Much more work will be done regarding the nature of and timing of the conditioning process. At present, this audiometric technique is in use and under study in several centers in this country and abroad, and it is to be expected that these problems, and others not mentioned, may be eliminated in the course of time. The technique is special and exacting; it is part of the diagnostic function of a medical center; its use requires a thorough acquaintance with children, with hearing problems, with some elements of neurophysiology, expensive instrumentation, skillful audiometric technique, and a trained clinical team.

As matters stand, with the assumption of reasonably normal sympathetic responses from the child, skin-resistance audiometry is the only method

presently known that promises to meet all the criteria applicable to clinical diagnostic testing of the acuity of the auditory end-organ in infants and very young children. What results may obtain regarding various midbrain lesions remain to be determined; a good many cerebral palsied children under the age of four have been tested and what appear to be consistent findings have been obtained. Enough has been done with cases suspected of aphasia or dysphasia to indicate that the technique is a useful means of differential diagnosis so far as the end-organ is concerned. With the data presently accumulating, much information is being obtained about certain auditory defects that exist from birth. As further work is done in perfecting the general method, its utility should result in better case-handling, in earlier apprehension of physical handicaps, in improved clinical diagnosis of hearing impairment, in the differential diagnosis of dysphasia and amentia, and in the prevention of much that is most handicapping in the linguistic and behavioral development of the child.

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Studies In Speech Reception Testing

Marcella Pepper Doyne

M. D. Steer

THE ABILITY to understand speech is, for all practical purposes, the most important aspect of hearing. The individual who loses his hearing is handicapped both socially and economically. For this reason, the American Medical Association considers loss for speech as the criterion of auditory deficiency. Davis and his colleagues (*5*) and Harris *(9)* have stressed that intelligibility of speech receives prime consideration in the design and fitting of hearing aids. Speech reception also plays a major role in the evaluation of all voice communication equipment and in the selection of personnel for occupations requiring voice communication under difficult acoustic conditions.

Despite this concern with understanding the human voice, the testing for speech still lags behind the testing for other sound stimuli. Studies on pure-tone audiometry by Harris *(10)* and Witting and Hughson *(22)* have shown high degrees of validity and reliability for this technique. Davis (*3*) states that 'the measurement of speech is never as precise as the measurement of pure tones,' and the general contention is that the results of pure-tone audiometry are still more reliable and valid than the results of any other type of auditory test.

Although investigations by Carhart (*1*) and Curry (*2*) have shown a close relationship between the thresholds for speech and for pure tones, there is ample evidence from studies by Carhart *(1)*, Hughson and Thompson *(12)*, and Thurlow *et al (20, 21)* that sharp discrepancies exist between results of the two types of test. It is still impossible to predict accurately the ability to hear speech from an audiogram, or, conversely, to predict an audiogram from speech reception test results. Wherever it is desirable to determine an individual's capacity to hear all types of sound stimuli within the auditory range, both speech and pure-tone tests should be administered.

There are, in general, two types of speech reception tests: threshold and discrimination. The former measures auditory acuity, by a comparison of the obtained threshold[1] (usually for relatively easy and dissimilar words or sentences) with the established norm. One of the most widely used threshold tests for speech is Auditory

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[1]The level at which 50% of the items are understood.

Test No. Nine, developed at the Harvard University Psycho-Acoustic Laboratory. This test, described in detail by Hudgins and his associates *(11)*, consists of spondaic words, that is, dissyllable words with nearly equal stress (*cowboy, wigwam, hotdog,* etc.) arranged in two lists of 42 words each. There are six scramblings of each list, providing a total of 12 equivalent forms.

In order to study the functioning of normal ears under various conditions and the deviations from normal by impaired ears, it frequently is necessary to have, in addition to a measurement of acuity, a test for discrimination between similar speech sounds. Thurlow *et al (20)* and Davis *(4)* consider the PB-50 (Phonetically Balanced) Lists constructed at the Psycho-Acoustic Laboratory as the most reliable measure of this discrimination ability available at the present time. There are 20 lists, each containing 50 monosyllabic words. Eight of the lists have been recorded at Central Institute for the Deaf, St. Louis, and have been rather widely distributed for clinical and research purposes. The voice of a trained radio announcer was used and the recordings were cut at a constant intensity level, so that the examiner may administer each test at any desired level of intensity. The score on any test is the percentage of the total number of words repeated correctly by the listener. A maximum score on the PB test can be taken as a measure of the subject's auditory discrimination, that is, of his ability to understand difficult words.

Thurlow *et al (20)* report a correlation of .82 between thresholds for the PB and the No. Nine (spondaic words) tests, with the average PB score lying approximately 11 db above the No. Nine threshold. The articulation curves[2] for these tests are well known and have been reported by Egan (*6*), Davis (*3*), and others.

The VCL Test

In 1943, the Voice Communications Laboratory at Waco Army Air Field, Texas, initiated a series of investigations aimed at providing a training program for increasing the effectiveness of voice communication in aircraft *(19)*. As part of this program, it was necessary to devise a test which would indicate the intelligibility of different speakers. The development and standardization of this test are described by Haagen *(8, 13)*. The criteria used for the selection of test items were:

1. One- and two-syllable words.
2. Words judged to be within the vocabulary of high school sophomores (words with Thorndike ratings of 10 or less).
3. Words pronounced correctly 90% of the time in trial tests.
4. Words between 20%-80% intelligible on trial tests.
5. Avoidance of homonyms.
6. Avoidance of words with alternative stress patterns.

After extensive experimentation with write-down intelligibility tests based upon these criteria, the Laboratory prepared a multiple-choice test now known as the VCL 24-Word Multiple-Choice Test. The test is explained briefly by Haagen *(8)*:

> Each test consists of 24 words that are read in groups of three. There is a listener form that contains for each test 24 groups of four words (each

[2]The relationship between the per cent of correct responses and the intensity of the signal can be expressed as an 'articulation curve.' Davis (*3*) states it is 'in general a smooth S-shaped curve that is steepest at or a little below its middle, and that at the upper end it levels off rather gradually to a plateau.'

group containing a test word and three other words similar to it in sound). As the test words are spoken, the listeners attempt to identify them within the groups of four similar words. For example, the speaker says: 'mortar, shut, assist'; the listener selects the words from:

1. order	shook	enlist
2. mortar	shout	resist
3. border	shut	assist
4. water	shot	insist

A study of the errors made in the write-down tests provided the choice responses (foils) on the answer sheet. Black (7) states, 'A word that was consistently written instead of the test item was supposed to be perceptually similar to the test item.'

The write-down tests and multiple-choice tests were found to be equally difficult and to have equal reliability (about .80 by split-half correlations). Items were assigned to lists to make them equal in mean intelligibility and approximately eqaal in standard deviation. The final form of the multiple-choice test contains 24 equivalent lists of 24 words each. The test is divided into Forms A and B, each containing 12 lists.

Purpose of the Studies

During the past three years the VCL 24-Word Multiple-Choice Test has been subjected to further analysis and experimentation at Purdue University, under the auspices of Navy Research Project N6ori-104. In all cases, the test was administerd for the purpose of measuring speaker or listener intelligibility in noise. The application of the VCL as a test of hearing, under quiet conditions, was considered by the experimenters and formed the basis for these studies. The basic questions to be considered were:

1. What is the intensity level—intelligibility relationshp for the VCL administered as a recorded, single-item test (rather than in a sequence of three words) to a group of normal-hearing subjects?
2. How do these results compare with results obtained for the No. Nine (Spondee) and the PB tests administered under the same conditions?
3. Which type of articulation test does the VCL more closely resemble—a test of acuity (as represented by the Spondees) or a test of discrimination ability (as represented by the PB lists)?
4. Does the VCL differentiate normal-hearing from hard of hearing subjects?

On the basis of two preliminary investigations, it was decided to administer the VCL as a recorded, no-choice test. This procedure stemmed primarily from a consideration of uniformity and ease of administration.

Subjects

The 25 subjects used in the first study were obtained from beginning speech classes at Purdue University, and from the staffs of the Purdue Speech and Hearing Clinic and Navy Voice Communication Research Laboratory. Several student clinicians also volunteered to serve as subjects. The only requirement was normal hearing[3], as indicated by an audiometric 'sweep-check' test at 10 db in the four frequencies comprising the speech range (512, 1024, 2048, and 4096).

The 22 hard of hearing subjects were drawn from students enrolled in the clinic for hearing therapy and from the health survey of students entering the University. Complete audiometric tests of these subjects showed various degrees and types of hearing loss.

The age range for all subjects was 17-35 years.

[3] Kelly and Steer (14) report that, in a young adult college population, scores are not significantly affected by age, intelligence, and previous experience with communication equipment.

Tests

The word lists recorded by the experimenters and used for tests were:

1. VCL Form A, lists 1 through 8; 24 items per list.
2. Spondee lists 1a, 2f, 1b, and 2d; 42 items per list.
3. PB lists 1 through 4; 50 items per list.

In addition, PB lists 5 through 8, recorded at Central Institute for the Deaf, were used. Each of the PB lists was administerd as two 25-word lists and each Spondee list as two 21-word lists.

All tests were recorded at a constant intensity level[4]. An attempt was made to monitor the test items on all the Purdue recordings. It may be noted, however, that monitoring on the PB lists, recorded at Central Institute for the Deaf (lists hereafter to be designated PB-CID), was done on the carrier phrase, and not on the test item itself.

Each recorded test begins in the following manner: 'This is VCL List A-1. Are you ready? Number One is *clean*,' etc. There is a three-second interval between test items on all the recordings.

The coefficients of reliability for the tests employed, computed by the odd-even method and corrected by means of the Spearman-Brown Prophecy Formula *(17)*, were above .93.

Procedure

High-fidelity speech reception test equipment, assembled at Purdue University was used in these studies. This speech reception equipment consists of the following major components: a pre-amplifier, a noise generator, a power amplifier, a power supply and a 15" Stephens Tru-Sonic P52A coaxial speaker in a bass-reflex cabinet. The pre-amplifier, noise generator, power amplifier and power supply are mounted in a standard relay rack of the cabinet type. A Presto type 15 Phono turntable is installed on a roller suspension drawer within the rack. A detailed description of this equipment is given by Ringo and Steer *(18)*.

Each subject was seated in a chair directly in front of the loudspeaker in a sound-treated testing room and instructed not to move the chair nor to lean towards the loudspeaker during the testing. A microphone on the arm of the chair transmitted his responses, via a talkback amplifier circuit, to the examiner in another sound-treated room. The examiner then gave the necessary instructions, adapted from the instructions for Auditory Test No. Nine *(16)*. All measurements were binaural, taken under modified free-field conditions.

Four recorded tests were administered: No. Nine (Spondee), VCL, PB-CID, and PB (Purdue). The word lists for the VCL test were compiled from the original multiple-choice test form. The No. Nine test was administered at 35-10 db levels inclusive, the VCL and PB tests at 50-15 db levels inclusive. There was an intensity decrement of five db per list.

Two one-hour periods were required of each subject for the completion of all four tests, which were rotated in the following manner:

Subject	*First Period*	*Second Period*
1	VCL, PB-CID	No. 9, PB (Purdue)
2	PB-CID, VCL	PB (Purdue), No. 9
3	No. 9, PB (Purdue)	VCL, PB-CID
4	PB (Purdue), No. 9	PB-CID, VCL
5	VCL, PB-CID	No. 9, PB (Purdue)

[4] Presto Model 8DG Professional Disc Recorder was employed.

TABLE 1. Mean percentage scores and standard deviations for normal-hearing subjects. N=25.

Db	*VCL*		*Spondee*		*PB (Purdue)*		*PB-CID*	
Level	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
50	90.00	7.82			91.04	6.53	70.88	11.29
45	86.67	9.71			89.12	6.65	62.24	9.67
40	88.16	7.37	99.81	.69	80.00	8.24	56.48	10.99
35	79.67	10.38	97.90	2.91	69.92	12.71	48.32	17.74
30	75.16	13.38	91.81	10.88	53.12	13.97	59.68	13.90
25	46.66	18.68	88.38	10.14	36.96	20.50	29.60	15.39
20	31.66	23.26	65.91	22.65	30.88	23.34	14.72	14.61
15	4.84	6.43	52.76	34.80	6.72	9.91	1.28	3.53
10			16.95	21.93				

Scoring was done on forms on which intensity levels in decibels (re 0.0002 dynes per cm^2) were indicated on the horizontal axis across the top of the sheet, with numbers of the test items on the vertical axis. The total number or per cent of correct responses at each level was written in the appropriate column at the bottom of the scoring blank.

Most of the tests were administered by the senior author. The use of another examiner was found to be desirable, however, in a few instances. Therefore, jointly-scored tests were administered to 15 subjects as a means of determining scoring reliability for the two testers. While the resulting Pearsonian correlation coefficient of .99 is not considered to be of material statistical significance, in view of the size of the sample, it is felt that the degree of agreement shown is ample justification for the use of a second examiner.

Results

Normal-Hearing Group. Table 1 is a summary of the obtained results for the normal-hearing subjects. Mean per cent of correct responses at given levels of intensity of the applied signal are shown for the four tests employed.

The obtained threshold (50% correct responses) for the VCL test lies approximately at 26 db, 11 db above the obtained threshold for the Spondee test and three db below the PB (Purdue) test threshold. Because of a reversal in mean scores at the 30 db and 40 db levels on the PB-CID test, it was not possible to determine the exact location of the 50% level. It is not likely, however, that this point deviates markedly from the 33 db

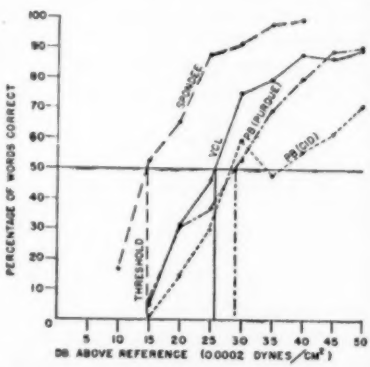

FIGURE 1. Relationship between mean per cent intelligibility and intensity level for normal-hearing subjects on recorded tests.

TABLE 2. Correlation coefficients of mean scores for recorded tests.

	Spondee	*PB (Purdue)*	*PB-CID*
VCL	.92	.97	.97
Spondee		.90	.88
PB (Purdue)			.95

level usually reported for the PB threshold (*3*, *4*, *5*).

Figure 1 is a graphic representation of the obtained data for the normal-hearing subjects. Inspection of the straight-line graphs reveals that (1) the VCL test, as administered in this study, resembles the Spondee test in general shape and steepness of slope; (2) it appears to be considerably more difficult than the Spondee test, but less difficult than the PB-CID test; and (3) there appears to be some overlapping of the VCL and PB (Purdue) tests at the lower and upper extremes.

An attempt was made statistically to show relationships and differences among the tests. Table 2 contains the Pearson product-moment coefficients of correlation between pairs of tests. The high correlations are not surprising when the nature of the data is considered (the same type of response is required on all the tests).

TABLE 3. *F* test of signifiance of differences in variance of recorded tests.

Source	*SS*	*d.f.*	*V*
Tests	186,907.61	3	62,302.54
Levels	314,352.02	5	62,870.40
Subjects	37,940.76	24	1580.86
T×L	23,579.47	15	1571.96
T×S	34,665.09	72	481.46
L×S	28,379.48	120	236.50
T×L×S	44,209.33	360	122.80
Total	670,033.76	599	1118.59

$$F = \frac{V_L}{V_{T\times L\times S}} = 507.35 \quad \text{Sig. } 1\% - 3.83$$

$$F = \frac{V_L}{V_{T\times L\times S}} = 511.97 \quad \text{Sig. } 1\% - 3.06$$

TABLE 4. Significance of differences between test means.

Tests	*Difference*	*t*	*Significance*
VCL-Spondee	28.40	22.20	
VCL-PB (Purdue)	8.09	6.32	All significant beyond 1% level. (For 24 d.f., tabled value of *t* at 1% level= 2.797)
VCL-PB-CID	19.35	15.12	
Spondee-PB (Purdue)	36.49	28.52	
Spondee-PB-CID	47.75	37.32	
PB (Purdue)-PB-CID	11.26	8.80	

The results of an analysis of variance employing the *F* test of significance for small samples are shown in Table 3. The differences in variance among the tests appear to be significant statistically beyond the 1% level (*15*).

The *t* values for the significance of differences between the means of paired tests were then computed and found to be significant beyond the 1% level in each case. These results are shown in Table 4.

Hard of Hearing Group. Figure 2 and Table 5 indicate the relative performances on the VCL test by the normal-hearing and hard of hearing groups. Inspection of Figure 2 reveals that the differences in performance of the normal and hard of hearing groups increase in magnitude as the db level is raised. Evidence is thus presented which indicates that the VCL test may be of value in differentiating between normal and hard of hearing persons.

TABLE 5. Mean percentage scores and standard deviations for normal-hearing and hard of hearing subjects (VCL test).

Db above reference	*Normal-Hearing*		*Hard of Hearing*	
	M	*S.D.*	*M*	*S.D.*
50	90.00	7.82	71.82	9.86
45	86.67	9.71	58.90	30.30
40	88.16	7.37	55.12	33.69
35	79.67	10.38	44.89	31.92
30	75.16	13.38	39.40	33.23
25	46.66	18.68	23.24	22.64
20	31.66	23.26	8.71	11.68
15	4.84	6.43	.19	.88

Summary and Conclusions

The purpose of these studies was to investigate the application of the Voice Communications Laboratory 24-word Test as a speech reception test of hearing ability, and to compare the results with those obtained under the same conditions for two established intelligibility tests, Auditory Test No. Nine (Spondaic Words) and the PB-50 (Phonetically Balanced) lists.

Twenty-five normal-hearing subjects and 22 hard of hearing subjects were administered modified forms of the three tests, recorded by the experimenters at Purdue University, and the PB test recorded at Central Institute for the Deaf. The tests were administered in five db steps, through the Purdue Speech Reception Test Equipment. The reliability coefficients for the four tests, computed by the odd-even method, all were above .93.

The mean percentage scores and standard deviations of the normal-hearing subjects were computed for the tests at each intensity level and the relationship between scores and intensity were plotted on a graph. Results of the tests for both the normal-hearing and hard of hearing groups were then subjected to statistical analysis.

Within the limits of this investigation—the samples, tests, apparatus, and procedures used—the following conclusions may be drawn:

1. The mean threshold for the VCL test lies at approximately 26 db above reference, with a mean score of 0% at 10 db and 90% at 50 db.

2. A high inter-relationship exists among the VCL, No. Nine and PB tests.

3. Differences among the test means are statistically significant.

4. Although the VCL data (intensity level vs. percentage of correct responses) closely resemble those obtained for the No. Nine test, the VCL is considerably more difficult than the No. Nine, but not as difficult as the PB tests.

5. The VCL test appears to differentiate between persons of normal hearing and defective hearing.

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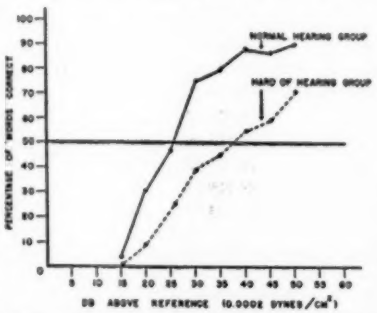

FIGURE 2. Relationship between mean percentage of words correct for normal-hearing and hard of hearing subjects on VCL test.

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Michigan's Mobile Hearing Units

Courtney D. Osborn

IN THE FALL of 1946, the staff of the Michigan Department of Health's Hearing Conservation Unit decided to investigate the possibility of constructing a mobile hearing trailer equipped for clinical speech reception testing and hearing aid evaluation. The value of trailer units in furnishing specialized services in public health has been demonstrated for many years with the use of X-ray and dental trailers.

The resulting mobile hearing unit (Figure 1) has now been in operation in Michigan for almost three years. We feel that the value of the unit has been adequately demonstrated, and that it suggests the possibility of the use of similar units in providing more widely spread services in audiology.

Courtney D. Osborn (M.A., Wichita, 1939) is Supervisor of Hearing Conservation Services, Maternal and Child Health Section, Division of Local Health Administration, Michigan Department of Health. The following persons made suggestions that were incorporated into the completed unit: Dr. Gordon Peterson, Bell Telephone Laboratories; Dr. Clarence V. Hudgins, Clarke School for the Deaf; Dr. Harlan Bloomer and Dr. D. E. Morley, University of Michigan; Dr. S. Richard Silverman, Central Institute for the Deaf; Dr. Warren H. Gardner, Cleveland Speech and Hearing Center; Mr. Alfred Thea, Constance Brown Society for Better Hearing; Mr. John Pomeroy, Radio Station WILS; Mr. Ken Robinson, Industrial Health Section, Michigan Department of Health; and Mr. Raymond Cromer, Hearing Conservation Unit, Michigan Department of Health.

This article will discuss the value of the unit in a state-wide hearing conservation program among school children, and will describe the construction of the Michigan unit.

During the fall of 1946 and the spring of 1947, letters were sent to various individuals asking for suggestions concerning the planning of the unit. As it was finally constructed, the mobile hearing unit combined the suggestions of many individuals who submitted advice or help.

Many preliminary problems were apparent in the construction of the unit. The use of great mass and weight in sound treatment of the trailer was not indicated, since for purposes of mobility and economy, a small, light weight unit was desired. It was felt that since some construction compromises were inevitable, more attention should be paid to sound absorption and less to sound exclusion. The mobility of the unit would allow considerable freedom in selecting quiet parking places in which to work, thus indirectly reducing noise levels in the trailer. Since the unit was to be used primarily in rural areas in connection with a field service program, more leeway could be allowed in sound treatment than if the unit were to be used for research purposes.

The completed unit has adequately met the purpose for which it was intended at a cost only slightly exceeding that of a fully equipped house trailer. A second unit has now been

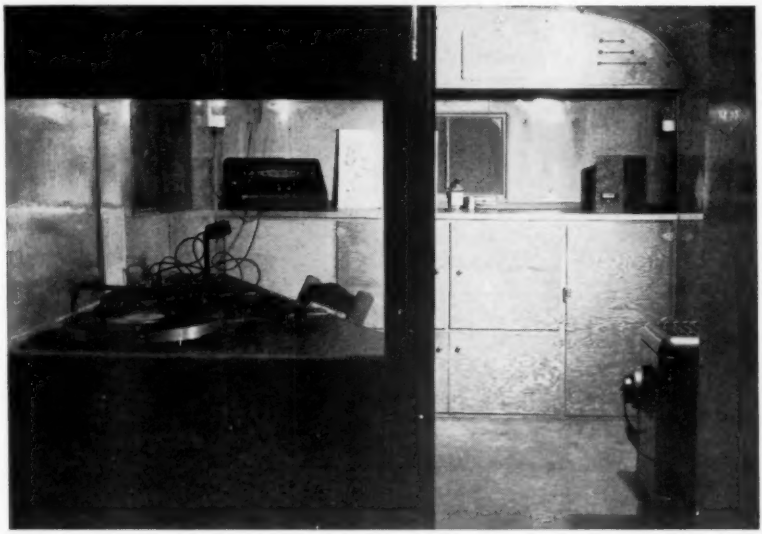

FIGURE 1. Interior of the Michigan Mobile Hearing Unit, showing the control or waiting room, viewing window, equipment console, and supply cabinet.

added to the Michigan program, and has been in operation over a year.

The development of the mobile unit was motivated by two needs which had been demonstrated in the hearing conservation program: (1) The need for suitable testing rooms for individual audiometric testing in crowded and in rural schools, and (2) the need for speech reception and intelligibility testing and for hearing aid evaluations in rural areas in connection with the program's hearing aid project.

Use of the Unit in Case-Finding Programs. For several years prior to 1946, the staff of the hearing conservation unit had felt that its case-finding program in the schools was being seriously hampered by the lack of suitable testing quarters in many of the over-crowded schools. In the Michigan program, preliminary screening tests are conducted by locally employed people, and the children who are screened out are then referred for individual pure-tone tests and consultation by a consultant from the Michigan Department of Health (2). Emphasis has always been placed on careful individual audiometric studies by an adequately trained audiologist before the child is referred for otological examination, in order to avoid over-referral of cases due to testing mistakes.

Reasonably quiet testing quarters are prerequisite to accurate audiometric tests, particularly if slight hearing deviations are to be measured accurately, and if small children are to be tested. With the trailer parked in a quiet school yard, the testing room has an ambient noise level of below 24 decibels, as measured with a General Radio Type 759-B sound level meter with the weighting network set at 40 decibels. A series of readings taken during actual testing programs in var-

ious parts of the state show an average ambient noise level in the testing room of the mobile unit of 30 decibels or under. When the unit is parked on school playgrounds during recess, or in parking lots near traffic noises, or in the presence of other noise, the sound level in the testing room measures an average 20 decibels lower than just outside the unit. Of course, care is always taken to see that the trailer is parked in a quiet location.

We feel that the use of the unit as an individual pure-tone testing room alone justifies its cost and the cost of its operation.

Use of the Unit for Specialized Tests. The electro-acoustic amplifying system has proved to be of value in testing certain children who do not respond adequately to the pure-tone audiometer. By the use of amplified speech, music, noise, or other signals, a quick and consistent bilateral threshold of hearing can often be obtained for speechless children, aphasics, severely deafened small children with no language development, mentally retarded children, or other children with gross developmental defects.

The early establishment of the presence or absence of hearing defects in such cases of gross developmental retardation is often of great value in planning the child's future. In the three years that the mobile hearing unit has been in operation, a steadily increasing number of such children have been referred to the mobile unit by local physicians and ear specialists, public health personnel, educational authorities, and parents.

Use of the Unit for Hearing Aid Evaluation and Selection. Figures from the Michigan hearing conservation program indicate that 0.27% of school children in regular classrooms in Michigan schools have a hearing loss of over 35 decibels in the better ear. These figures do not include those children who are receiving special education in the schools. The majority of these children live in rural areas where special rooms and special teachers are not economically feasible because of the relative isolation of each handicapped child. Only 0.01% of children in regular classrooms in Michigan might be classified as 'deaf' or 'near-deaf,' with an average hearing loss of over 60 decibels in the better ear. Attendance at residential schools for the deaf is not indicated for large numbers of children, since their hearing losses are relatively slight, although handicapping. Figures from our program indicate that there must be about 15,000 such children in our Michigan schools not receiving special educational attention. These scattered handicapped children constitute a real educational and social problem.

Although a properly administered hearing conservation program will discover many children whose hearing losses will be correctable with prompt and adequate medical care (*1*), large numbers of children will still be found to have permanent handicapping hearing disorders. Properly selected hearing aids and instruction in the use and care of the aids offer a logical solution to the educational problems of many of these children.

The small number of centers where audiologic services could be obtained was instrumental in the development of our mobile hearing unit. Many of the hearing handicapped children in Michigan live from 300 to 700 miles from the nearest center, and transportation problems almost precluded these services for many children.

Each unit carries a library of eight instruments, all on the approved list of the American Medical Association.

Service facilities are available for most of the instruments throughout the state.

Use of the Unit in Community Education. One of the important functions of a sound hearing conservation program should be to help educate the public to the fact that many hearing losses in children can be corrected or prevented with discovery and prompt medical care. The educational value of a mobile hearing unit of this type in hearing conservation programs should not be overlooked. The trailer and its equipment attracts attention, and the general public learns that hearing problems exist and that something can be done about them.

Speech reception testing of hard of hearing children with the parent or teacher in the testing room will often result in more real understanding of the child's handicap than any conference or explanation would ever accomplish. Such demonstrations are of real value in convincing parents or teachers of the needs of the hard of hearing child.

Construction of the Trailer

The unit was constructed from the shell of a 21-foot trailer (Figure 2). A partition was built just in front of the wheel housing, so that the trailer is divided almost equally into a control and waiting room, and a rear room which is the testing or sound room. The rear door and right rear window of the trailer were eliminated from the assembly. The control room has the regulation door, windows, roof ventilator, and cove cabinet.

The unit is equipped with electric brakes, duotherm stove with a special booster fan to deliver heated air to the sound room, and a 150-foot heavy duty trailer extension cord mounted on a reel. A Hubbell twistlock connector is provided for the trailer outlet.

The 115-volt trailer connector outlet is installed in the regular position, but two fused electrical circuits are provided in the trailer. One circuit serves the trailer lights and convenience outlets, and the other connects with the outlets for the electro-acoustic equipment and with two additional convenience outlets located in the front of the control room. The fuse box is located in the end of the built-in cabinet of the control room.

The Testing or Sound Room. In the walls and ceiling of the testing room, the regular two inches of spun glass insulation in the trailer shell was left,

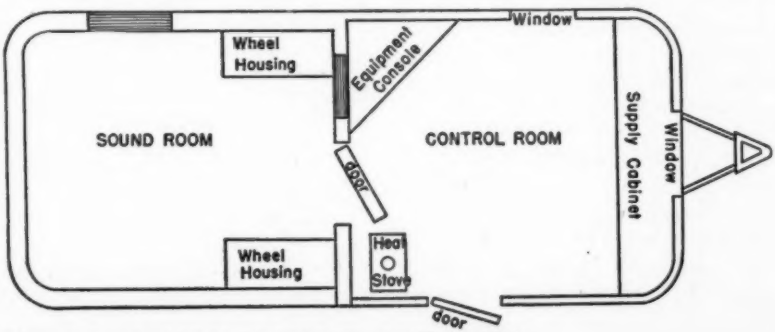

FIGURE 2. Sketch of Michigan's Mobile Hearing Trailer Unit.

and the studding extended to support four inches of tightly packed rock wool insulation sufficiently dense so as to prevent sagging. This is held in place with copper mesh wire, which is fastened securely to the studding. A sheet of monk's cloth is stretched tightly over the copper wire to provide the wall covering.

The original floor of the sound room was covered with a felt pad, which is drawn up at the sides and ends level with the top of the second floor. Over the felt pad was laid a three-inch layer of insulating cork, and on top of this a double thickness of cross-laminated plywood floor section. This is covered with Kencork tile which provides the floor of the sound room. It may then be covered with a heavy carpet.

The wheel housings were covered with insulating materials similar to the walls, and boxes were constructed over them. These are covered like the floor of the sound room, so that the housings serve as benches.

The window on the left side of the testing room is of double construction. The outer window sash was permanently sealed in rubber in closed position. A frame was constructed comparable in thickness to the studding in the sound room. A second window mounted in rubber is fastened to this framing, creating a sealed double window with an air space between the frames. The inside pane may be removed for cleaning purposes.

A small viewing window is set into the partition between the control and testing rooms on a level with the top of the equipment cabinet table. This window consists of a sealed unit of three panes set in rubber, with air spaces between the panes. The two outer panes are removable for cleaning purposes.

The door between the control and testing rooms was constructed and sound treated in a similar manner to the walls and ceiling of the testing room. The door itself is of the 'ice-box' type, with a bevel on the top and lock side. The lower part of the door seals up against the shoulder of the sound room floor, and the rest of the door shuts tightly upon a soft rubber moulding.

Lighting in the testing room is furnished by a ceiling fixture and two bracket lights located on opposite sides of the trailer. The lights have fixed bases built out comparable in thickness to the sound treated walls and ceiling. Two convenience outlets are provided with the bracket lights.

The Control and Waiting Room. In the present Michigan units, the walls and ceiling of the control room are of standard trailer construction. This is being modified at the present time by the addition of an acoustic tile covering to give additional sound insulation.

In addition to the regular cove cabinet in the control room, a special storage cabinet has been constructed across the front of the trailer. This is divided into compartments of suitable size to carry folding chairs, records, microphones, hearing aids, fuel oil, flares, and similar supplies.

The stove for heating is located in the usual position. A booster fan delivers heated air to the floor of the control room, and blows heated air into the testing room through a pipe installed through the wheel housing. When the stove is not lighted, the booster fan may be used to ventilate the testing room.

The Electro-Acoustic Equipment. The electro-acoustic equipment in the

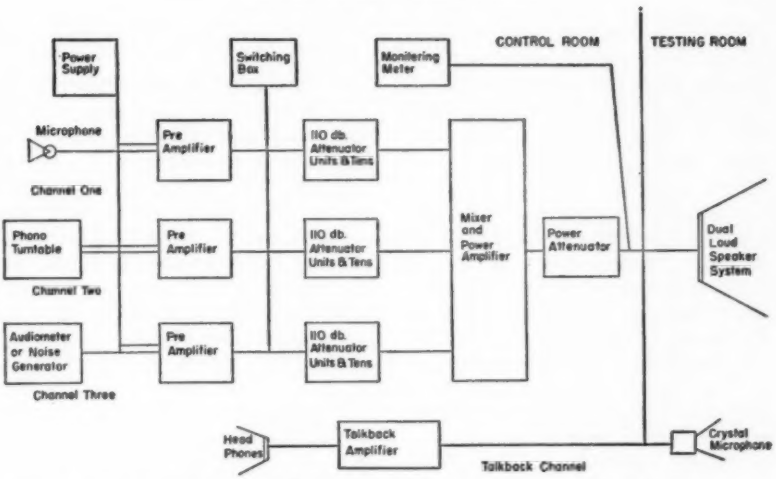

FIGURE 3. Block diagram of electro-acoustic equipment in the Mobile Trailer Unit.

mobile hearing unit is diagrammed in Figure 3. Essentially it is a three-channel electro-acoustic amplifying system of high fidelity capable of delivering signals at sound pressure levels up to 100 decibels through a loud speaker or earphones. The over-all frequency response is reasonably flat to 15,000 cps.[1]

Each channel runs through a pre-amplifier and an attenuating network which provides attenuation in one- and ten-db steps up to 110 decibels, into a power amplifier and mixer which is also attenuated. This drives a dual loud speaker system mounted in a bass reflex cabinet in the testing room. Earphones may also be plugged into the system instead of the speakers. A monitoring meter may be used to measure electrically the power delivered by the power amplifier into the speaker.

A switching arrangement allows the operator to switch in any channel or combination of channels instantly and mix them at will. There is no significant alteration of frequency or intensity when the various input channels are operating together.

The first channel is for live voice testing through a microphone.

The phonograph turntable in the second channel is of the broadcast type, with a 16-inch table capable of handling both 78 and 33⅓ rpm recordings. The transcription pickup has a filter arrangement with five positions which may be adjusted for lateral reproduction according to NAB recording standards, to orthacoustic recording standards, and for shellac phonograph records and worn transcriptions.

In the third channel, instead of a built-in noise generator, a jack connection is provided and the equipment matched as to input-output impedances so that an audiometer may be plugged into the channel. After

[1]Complete specifications for the equipment may be obtained from the Maternal and Child Health Section, Michigan Department of Health.

proper calibration, this channel may be used for free field pure-tone testing by plugging into the pure-tone circuit of the audiometer. By plugging into the masking circuit of the audiometer, the masking noise may be utilized in the channel.

The talk-back system consists of a crystal microphone in the testing room, an amplifier and a pair of earphones for the operator.

The loud speaker system in the testing room contains a four-position high frequency range control switch, which may be adjusted to select a cut-off frequency at four points from 6,000 to 15,000 cps, when the high frequency speaker is contributing its full frequency range.

The equipment is mounted in a console of table height (Figure 4), which is bolted into the floor and wall of the control room in front of the viewing window. On the top of the desk-like cabinet are all controls necessary for normal operation of the equipment. The starting switches and pilot lights of the power supply, preamplifiers, and power amplifiers are located on the front of the console.

Insofar as possible, the equipment was assembled so that changes can easily be made if desired. Connections between the units are wired through jacks or in other ways easily changed. In normal operation, all changes are accomplished by means of switches, and no patch plugs or cords are necessary.

The Unit in Field Use

The electro-acoustic equipment in the mobile unit has proved to be extremely rugged in actual field use. In almost three years of operation, the mobile hearing unit has traveled approximately 30,000 miles over all

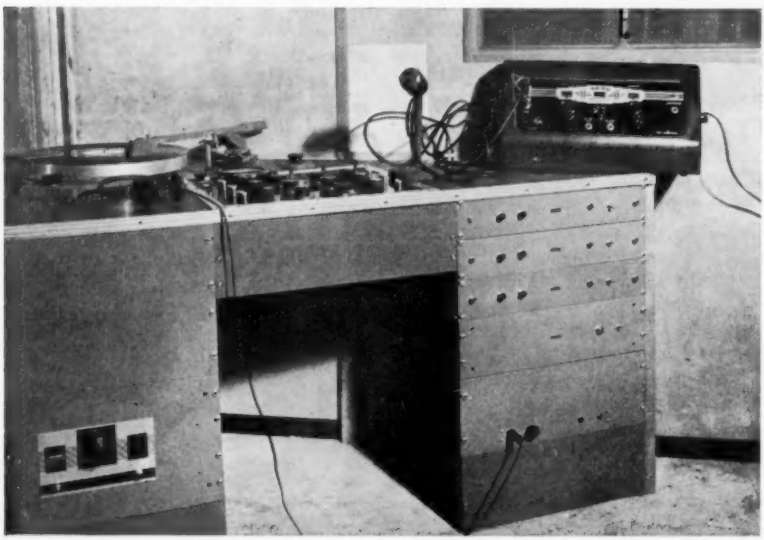

FIGURE 4. Equipment console in the Mobile Hearing Trailer Unit.

kinds and conditions of roads and in all kinds of weather. During this time, the equipment has required two repairs of minor nature, and on only one occasion has the equipment been out of operating condition. Frequent inspection and recalibration of the equipment has shown little or no variation in its response during this period.

The trailer has been in use in Michigan throughout each school year. Experience has shown that ice and wet snow are the only road conditions that will immobilize the unit. In general, the car and trailer combination works better in mud and dry snow than the car alone, the weight of the trailer giving better traction under these conditions.

The mobile hearing unit has operated successfully and comfortably in temperatures ranging as low as 30 degrees below zero. In hotter climates than Michigan, some additional arrangements to cool the unit in summer or to furnish more ventilation would be necessary.

In hearing conservation programs, such a mobile unit provides much more satisfactory environmental conditions for hearing testing than are available in most schools. In addition, the electro-acoustic apparatus enables detailed studies to be made of hearing abilities when necessary; provides a means of testing many children who will not respond to the discrete frequency audiometer; and offers an excellent method of demonstrating the effect of a child's hearing loss to his parents and teachers.

Our experience has shown the mobile unit to be successful as a means of providing facilities for speech reception and intelligibility testing and for hearing aid selection and evaluation to individuals in rural and sparsely settled areas.

Both the equipment and the trailer unit have been used consistently and successfully in a large hearing program among school children. The use of similar units would seem logical in providing a greater spread of audiologic services to hearing handicapped individuals.

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A Survey Of Services For The Speech And Hearing Handicapped In New England

Wilbert Pronovost

THIS SURVEY was originated by the New England Speech Association at its 1948 Conference for the following purposes:

1. To determine the extent and nature of existing services in speech and hearing.
2. To obtain data on the number of hearing handicaps, and the number and types of speech handicaps.
3. To investigate the training of the instructors of the speech and hearing handicapped in New England.

In conducting the survey, the committee was assisted by the Boston University Seminar in Speech Education.

A questionnaire type survey form was used. Survey forms were mailed to 3,870 schools, colleges, hospitals, and other types of institutions in the six New England states. The mailing list was compiled by members of the committee and members of the seminar. In some states, survey forms were sent to the superintendents of schools, in others to the elementary and secondary school principals, and in some states to both superintendents and principals. The decision was made by the state representative of the committee on the basis of the group which would probably make the largest number of returns with the most useful information.

The letter accompanying the survey form contained a list of sponsoring groups that were interested in the results of the survey. The sponsors included departments of education, health, and welfare in each New England state, the state societies of the National Society for Crippled Children and Adults, Inc., the American Academy of Pediatrics, the New England Pediatric Society, the New England School Development Council, and the New England Lipreading Teachers Association.

Results of the survey are presented in the tables in this report. Analysis of the tables shows that it is not possible to make direct comparisons between the various sections of the report. There was considerable variation in the manner in which the reports were answered. For example, many returns

Wilbert Pronovost (Ph.D., Iowa, 1939) is Co-director of the Speech Clinic, School of Education, Boston University. This is a summary of a report of *Speech and Hearing Services in New England*, New England Speech Association, Committee on Speech and Hearing Handicapped, Boston, 1950. Committee members are John Baird, University of New Hampshire; Geraldine Garrison, Connecticut State Department of Education; Ruth Hamilton, Cranston, Rhode Island, Public Schools; Barbara Hines, South Portland, Maine, Public Schools; and Eleanor Luse, University of Vermont; with the author as chairman. Members of the Seminar in Speech Education were Marion Campbell, Alice Dunbar, Mary Farquhar, Honora Foster, Mary Kiley, Rosalie Roberts, Barbara Smith, and Robert Weinberg.

TABLE 1. Extent of speech and hearing services in New England.

Type of Institution	*Number Sent*	*Number Returned*	*Per Cent Returned*	*Diagnostic Speech*	*Remedial Speech*	*Diagnostic Hearing*	*Remedial Hearing*
Public School Superintendents	465	174	37	83	111	78	65
Public Elementary Principals	1,340	136	10	53	69	40	28
Public Secondary Principals	449	73	16	22	36	20	13
Private Schools	177	30	17	7	6	6	3
Parochial Schools	737	37	5	6	9	4	6
Junior Colleges	16	2	13	1	1	1	–
Teachers Colleges	17	5	29	2	1	3	2
Colleges and Universities	83	35	42	10	8	10	6
Hospitals	466	75	16	12	16	6	8
Schools for the Deaf	16	11	69	7	10	8	10
Leagues for the Hard of Hearing	20	7	35	2	2	3	2
Special Speech Schools	16	10	62	6	6	4	4
Private Speech Therapists	12	6	50	1	4	1	3
Tutoring Camps	17	1	6	–	–	–	–
State Departments of Education	4	2	50	2	2	1	1
State Departments of Health	18	17	95	15	12	7	5
State Societies for the Crippled and Handicapped	10	9	90	8	8	7	5
Schools for the Handicapped	7	1	14	1	–	1	–
Totals	3,870	631	16.3	238	301	200	161

indicated the existence of diagnostic and remedial services, but questions related to the nature of these services occurring later in the survey form were not always answered. Thus, interpretations of the results must be made in light of the discrepancies which frequently occur in questionnaire surveys.

Extent and Nature of Services

Table 1 shows the number of surveys sent to the various types of institutions, the number and per cent returned, and the number which reported diagnostic and remedial services in speech and hearing. All of the tables in this summary present a composite picture for the six New England states. The percentage of returns for the individual states ranged from 10.8 for Vermont to 20.4 for Massachusetts. Although returns were received from only 16.3 per cent of the institutions to which the survey was sent, information from other sources indicates that more than 50 per cent of the known speech and hearing programs in New England are represented in the final results.

It will be noted that some speech and hearing services exist in all types of institutions analyzed, except tutoring camps. It may be noted also that speech programs exist more frequently than hearing programs. The majority of the speech and hearing programs reported are in the public schools of Massachusetts and Connecticut. The two groups with the highest percent-

ages of returns, the State Departments of Health, and the State Societies for the Crippled and Handicapped, also have the highest percentages of speech and hearing programs.

One inconsistency in this table is that more remedial speech programs were reported than diagnostic speech services. One explanation may be that some of the remedial speech programs are more of the nature of speech improvement programs, without detailed diagnosis. Another explanation may be that the meaning of the term 'diagnostic and referral services' was not clear to some of the individuals answering the questionnaire.

According to Table 2 audiometric testing services with the group phonograph audiometer or the individual

TABLE 2. Availability of certain types of hearing services.

Type of Institution	*Number Returned*	*Per Cent Returned*	*Group Phonograph Audiometer*	*Group Pure-Tone Audiometer*	*Individual Pure-Tone Audiometer*	*Fitting of Hearing Aids*	*Speechreading*	*Auditory Training*
Public School Superintendents	174	37	86	59	102	15	54	36
Public Elementary School Principals	136	10	63	26	74	8	21	11
Public Secondary School Principals	73	16	36	6	26	4	8	5
Private and Parochial Schools	67	7	10	2	4	1	4	2
Colleges and Universities	42	36	8	10	2	4	4	2
Hospitals	75	16	—	—	10	5	2	2
Schools for the Deaf	11	69	3	3	11	3	11	11
Leagues for the Hard of Hearing	7	35	3	1	2	4	5	2
Private Speech Schools and Therapists	16	57	5	1	4	2	4	5
State Societies of the National Society for Crippled Children and Adults	9	90	2	1	5	—	4	3
State Departments of Education, Public Health, Mental Health, and Health and Welfare	19	87	3	2	10	8	7	7
Total	629	16.2	219	111	250	54	124	86

TABLE 3. Comparison of diagnosis and remedial training.

	Number Diagnosed	*Number Receiving Speech Correction*	*Number Receiving Speechreading*	*Number Receiving Speech Correction and Speechreading*	*Number Referred to Otologist*	*Per Cent Receiving Remedial Training*
Articulation	3,608	2,312				64
Voice	972	687				71
Stuttering	1,037	638				61
Delayed Speech	608	325				53
Cerebral Palsy	264	231				88
Cleft Palate	306	253				83
Aphasia	92	94				100
Total	6,887	4,540				61
Hard of Hearing	18,955	2,483	2,156	978	3,917	30

pure-tone audiometer are available in approximately one-third of the institutions reporting. One-sixth reported use of the group pure-tone audiometer. A similar proportion provide speechreading. Services in auditory training and the fitting of hearing aids are much less extensive.

In Table 3 it will be observed that approximately 60 per cent of the individuals diagnosed as speech handicapped are receiving remedial training. Approximately 30 per cent of the individuals reported as hard of hearing are receiving speech correction and/or speechreading. Only 21 per cent of those reported as hard of hearing were referred to an otologist.

Information on the number and type of staff members employed was provided by 117 institutions with speech services and 76 institutions with hearing services. These institutions reported employment of 235 speech therapists and 164 speechreading instructors. In the educational field, 73 psychologists and 130 remedial reading instructors were reported. In the medical field, 280 registered nurses and 234 doctors, neurologists, psychiatrists, and ear, nose and throat specialists were reported.

Speech and hearing instructors were asked to report the distribution of their duties in the areas of speech correction, speech improvement, speechreading, audiometric testing, auditory training, and fitting of hearing aids. In Table 4, the results of these distributions are summarized to show the number of instructors with duties in both speech and hearing compared to those with duties in only speech or hearing. The data reveal that 44 per cent of the instructors have duties in both speech and hearing, while 37 per cent have duties in speech only and 19 per cent have

TABLE 4. Duties of speech and hearing instructors.

Type of Institution	*Speech Only*	*Hearing Only*	*Speech and Hearing*
Public Schools	57	38	45
Hospitals	8	1	5
Deaf Schools, Hearing Leagues	1	10	49
Colleges and Universities	10	—	7
Special Speech Schools	8	1	5
State Societies for the Crippled	2	—	3
State Departments of Health	16	—	7
Total for each duty	102	50	121
Per cent of total number of instructors	37	19	44

duties in hearing only. This trend is influenced greatly by the schools for the deaf where most of the instructors perform duties in both speech and hearing. In the public schools, however, the number with duties in speech correction only is slightly larger than those with duties in both areas.

Case loads of speech and hearing instructors are reported in Table 5. The median case load is 57 cases per week. One-fourth of the instructors have case loads of 200 or more cases per week.

Table 6 shows the distribution of institutions in the administration of group and individual therapy in speech and hearing. The most frequently reported lengths of individual speech therapy periods were 20 and 30 minutes. Most of these occur once or twice a week. Group speech therapy is given most frequently in groups of 10 or less, meeting once or twice a week for 20, 30 or 60 minutes. In hearing, individual therapy periods are most frequently 30 or 45 minutes in length, and meet once or twice a week. In group therapy, groups of 10 or less meet once or twice a week for 30 or 45 minutes per meeting.

TABLE 5. Case loads of speech and hearing instructors.

Average number of cases per week	*Number of Instructors*
10– 19	27
20– 29	10
30– 39	7
40– 49	9
50– 59	13
60– 69	6
70– 79	6
80– 89	4
90– 99	3
100–109	4
110–199	4
200	30
250	3

TABLE 6. Institutions reporting various amounts of individual and group therapy.

	Individual Speech Therapy	*Group Speech Therapy*	*Individual Hearing Therapy*	*Group Hearing Therapy*
Length of Lessons				
10 min.	4	—	—	—
15 min.	10	6	4	5
20 min.	17	13	—	—
25 min.	4	7	—	—
30 min.	30	13	18	18
40 min.	3	5	—	—
45 min.	9	5	15	15
60 min.	3	10	2	—
90 min.	—	1	—	—
No. of Lessons per Week				
1	19	36	21	21
2	14	19	12	13
3	8	5	1	1
4	3	—	—	—
5	6	6	3	3
Size of Group				
1–4	23	23	—	19
5–9	—	29	—	14
10–14	—	5	—	4
Over 20	—	3	—	1

Number and Types of Handicaps

Results of speech surveys, shown in Table 7, reveal that 7.8 per cent of the 87,288 individuals tested were handicapped in speech. It will be noted that the percentages vary according to the individuals conducting the sur-

TABLE 7. Surveys of speech handicaps.

Person Conducting Survey	*Number of Surveys*	*Number Tested*	*Number Handicapped*	*Per Cent*
Nurse	14	23,108	503	2.2
Teacher	19	6,753	522	7.7
Speech Teacher	20	33,077	4,305	13.0
Doctor	2	4,350	82	1.9
State Dept. of Education (Special Consultant)	1	20,000	1,400	7.0
Total	56	87,288	6,812	7.8

TABLE 8. Distribution of types of speech handicaps.

	Number Reported	*Per Cent of Total Number*
Articulation	6,282	50.0
Voice	827	6.6
Delayed Speech	548	4.4
Cerebral Palsy	132	1.0
Cleft Palate	154	1.2
Hard of Hearing	1,936	15.4
Deaf	1,057	8.4
Stuttering	1,363	10.9
Aphasia	58	0.5
Miscellaneous	208	1.6
Total	12,565	100.0

vey. The wide difference in numbers reported by the nurses and the speech teachers is probably due to differences in training of the two groups and a different basis of selection of the speech handicapped.

Data on the distribution of speech handicaps in Table 8 is consistent with other published data.

Table 9 presents the results of hearing tests for 311,168 individuals. The percentage of hard of hearing individuals is 6.1, although there are differences according to the persons giving the test. As far as is known, the results are based on audiometric tests. It is possible that differences in the interpretation of the audiometric examinations account for the discrepancies.

Training of Speech and Hearing Instructors

The information presented in Tables 10 and 11 reveal inadequacies in the training of speech and hearing instructors in New England. From Table 10 it may be seen that 26.5 per cent of the teachers do not have Bachelor's degrees. The specific courses listed in Table 11 have been taken by 81 per cent of the teachers or less. Other data not tabulated in this summary revealed that 5.1 per cent of those engaged in speech and hearing programs have taken only one course in speech or hearing.

Comparison of the instructor's training in the areas of speech and hearing revealed that 62.7 per cent of

TABLE 9. Surveys of hearing handicaps.

Person Conducting Survey	*Number of Surveys*	*Number Tested*	*Number Handicapped*	*Per Cent*
Nurse	115	92,938	3,383	3.6
Teacher	18	103,436	12,209	11.8
Speech Teacher	5	365	28	7.7
Lipreading Teacher	13	31,583	1,337	4.2
Doctor	4	3,304	131	4.0
Special Trained Person	14	79,542	1,879	2.4
Total	169	311,168	18,967	6.1

TABLE 10. Educational degrees of speech and hearing instructors.

Degree	*Number of Teachers*	*Per Cent*
No degree	58	26.5
Bachelor's Degree	75	34.2
Master's Degree	81	37.0
Master's and Ph.D.	4	1.8
Master's and M.D.	1	.5
Total	219	100.0

the instructors have taken courses in both speech and hearing; 33.4 per cent have taken courses in speech, but none in hearing; 6.9 per cent have taken courses in hearing, but none in speech.

TABLE 11. Number of teachers taking specific courses.

Course	*Number of Teachers*	*Per Cent of Total Reporting*
Fundamentals of Speech	178	81
Speech Correction Methods	177	81
Phonetics	170	77
Speech Improvement	151	69
Clinical Practice in Speech	132	60
Speech Science	128	58
Speech Pathology	127	58
Speechreading	125	57
Interpretation	122	56
Auditory Training	99	45
Audiometry	82	37
Fitting of Hearing Aids	49	22
Total Number Reporting	220	

The status of membership in the American Speech and Hearing Association of speech and hearing instructors in New England is shown in Table 12. Only 23.5 per cent of the instructors are members of the Association.

Summary and Conclusions

Results of the survey show that services for the speech and hearing handicapped in New England are not extensive. Of the services available, speech services are more extensive than hearing services. The speech and hearing programs reported here are unable to provide services for all individuals 'diagnosed' as handicapped. About 60 per cent of those 'diagnosed' as speech handicapped are receiving speech correction. Only 30 per cent of the individuals 'diagnosed' as hard of hearing are receiving speechreading and/or speech correction. Only 21 per cent of the hard of hearing cases were referred to an otologist. The number of individuals receiving remedial services is only about 2 per cent of the estimated number of individuals with speech and hearing handicaps in New England.

TABLE 12. Membership of teachers in American Speech and Hearing Association.

Type of Membership *	*Number of Teachers*	*Per Cent*
Non-member	168	76.5
Associate	22	10.0
Clinical	16	7.2
Professional	12	5.4
Fellow	2	.9
Total	220	100.0

*Membership classification prior to 1951 reorganization.

Reports on the staffs of speech and hearing clinics indicate that many clinics employ specialists in remedial reading and the psychological and medical fields. About half of the speech and hearing instructors are engaged in duties in both speech and hearing. Although the median weekly case load of these instructors is not excessive, one quarter of the instructors have case loads which are more than double the maximum recommended case load.

The section of the report dealing with teacher-training revealed that the well trained teachers had taken courses in both speech and hearing. The data revealed inadequacies, however, in the training of many instructors. Twenty-six per cent of the instructors have no educational degrees. Thirteen per cent have had only one or two courses in speech and hearing. Specific courses in speech and hearing have been taken by 81 per cent, or less, of the teachers.

Cerebral Palsy Professional Training Activities In This Country

Martin F. Palmer

DUE TO THE heavy demand for individuals properly trained in the field of cerebral palsy, all universities and colleges in this country offering professional training in the field of speech disorders in September, 1950, were sent a questionnaire inquiring as to the amount of academic and clinical opportunity available in cerebral palsy in their training institutions. The results from those who replied to the questionnaire are reported here.

Five universities reported special courses in the speech disorders of cerebral palsy, as shown in Table 1. These five universities and eight others reported that time was spent on cerebral palsy in other speech pathology courses (Table 2).

Since cerebral palsy clinics are largely developed in three directions, speech therapy, occupational therapy, and physical therapy, a question was asked concerning the opportunity of students to observe physical therapy and occupational therapy, orthopedic procedures, etc., while undergoing training. Table 3 shows the replies to this question.

Table 4 indicates whether or not universities require students to complete a specified amount of training before they are recommended for positions in cerebral palsy clinics.

The results of this survey indicate that a few of the professional training schools are offering separate academic material in the speech disorders of cerebral palsy. Most other institutions offer some material in other courses but there is a divergence of opinion as to the necessity of requiring com-

TABLE 1. Special courses offered in the speech disorders of cerebral palsy.

University	*Semester hour equivalent*
Denver	2
Iowa	3
Northwestern	3
Western Reserve	3
Wichita	8

TABLE 2. Time spent on cerebral palsy in other speech pathology courses.

University	*Time*
Cornell	10 lectures
Denver	2-3 weeks
Illinois	12-15 weeks
Iowa	5 lecture hours
Louisiana State	2 semester hours
Michigan	3 weeks
Minnesota	9 weeks
Missouri	2 weeks
Northwestern	6 semester hours plus 2 weeks
Purdue	1 week
Wayne	9 lecture hours plus 3 weeks
Western Reserve	3 semester hours
Wichita	3 weeks

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pletion of any set program before recommendation. Most schools do, however, require that the student complete a stated academic base before recommendation is made.

TABLE 3. Requirements of observation of physical and occupational therapy during training.

Required	*Qualified or limited observation due to lack of facilities*	*Not required*
Cornell	Michigan	Denver
Illinois	Missouri	Louisiana State
Iowa		Wayne
Michigan		
Minnesota		
Missouri		
Northwestern		
Purdue		
Western Reserve		
Wichita		

TABLE 4. Requirement of completion of academic preparation for Professional Membership* in ASHA prior to recommendation for employment in cerebral palsy clinics.

Yes	*Attempt to or interview takes place of*	*Hopes so*	*No*
Illinois	Iowa	Cornell	Purdue†
Michigan			Denver‡
Minnesota			Louisiana State
Missouri			
Northwestern			
Wayne			
Western Reserve			
Wichita			

*American Speech and Hearing Association membership level prior to 1951 reorganization. The present certification equivalent is the Advanced Certificate in speech.

†Requires completion of academic preparation for Clinical Membership in ASHA. Since the 1951 reorganization this is equivalent to the Basic Certificate in speech.

‡Does not train for employment in cerebral palsy clinics.

Infant Speech: Consonantal Position

Orvis C. Irwin

IN TWO PREVIOUS studies (1, 2) consonantal sounds of infants were analysed according to place and manner of articulation. The problem studied in this report is the status of the initial, medial, and final consonants in the speech patterns of infants. Specifically, the problem is to determine the nature of the development or mastery of consonantal sounds in each of the three positions—initial, medial, and final—during the first two and one half years of life. The analysis, then, will be based on two variables, position and age. This article will present the findings on phoneme types. A later article will handle the same problem in terms of phoneme frequencies.[1] The analysis is conducted in terms of the pattern of sounds the infant utters on the expiration phase of breathing. Thus the terms initial, medial, and final refer to the corresponding positions in the breath unit (3). It should be pointed out that toward the middle of the second year of life words begin to appear within the breath unit and this fact has been taken into account in the analysis. This means that after this time several initials, medials, and finals may be present in the complex breath unit.

Two different analyses were made. First a group of 18 babies whose records are continuous over the two and a half years were studied. Next an analysis of the records of all babies for whom there are records, both continuous and interrupted[2], was made to see if adding the interrupted cases changes or distorts the findings on the smaller group. In this manner the findings based on all the infants at each level affords a check on the results based on the 18 cases.

The data are found in Table 1. The values are the means at 15 age levels of the initial, medial, and final consonant types. The table gives the means of consonant types in the three positions under two headings, namely, for the 18 cases and for the total number of cases. The last column in the table indicates the entire number of infants studied at each age level.

Consideration must first be given to the question whether the three sets of position values belong to the same or to different populations. For this purpose an analysis of variance has been made of the total numbers of initial, medial, and finals. If the null hypothesis does not hold it will be legitimate to derive separate equations for the three sets of means. The results are presented in Table 2.

The analysis shows that the two variables, position and age, are signifi-

[1] 'Type' refers to the elemental speech sounds listed in the International Phonetic Alphabet. 'Frequency' refers to the numbers of times phoneme types are repeated.

[2] Interrupted cases are those who moved out of town before the completion of the study. Sickness and vacations also caused interruptions.

Orvis C. Irwin (Ph.D., Ohio State, 1929) is Research Associate Professor, Iowa Child Welfare Research Station.

TABLE 1. Mean numbers of consonant types according to initial, medial, and final position.

Age Levels*	Initial		Medial		Final		Total
	18 Cases	Total Cases	18 Cases	Total Cases	18 Cases	Total Cases	Number of Cases
1	2.44	2.50	2.06	1.56	.06	.06	61
2	3.22	3.20	3.22	2.75	.22	.26	79
3	3.06	3.55	3.06	3.26	.06	.35	74
4	4.72	4.70	4.00	4.29	1.00	.73	63
5	4.94	5.49	4.28	4.46	1.06	1.10	61
6	6.44	7.23	6.17	6.31	1.67	1.90	61
7	7.28	7.18	5.94	6.23	1.44	1.72	57
8	7.39	7.78	6.83	7.29	1.89	2.31	55
9	8.11	8.14	6.22	7.28	1.67	2.72	50
10	8.94	9.27	7.83	8.63	2.78	3.61	41
11	8.78	9.94	6.50	7.35	3.78	4.78	37
12	10.28	10.55	8.56	8.61	4.22	4.97	31
13	10.94	11.81	8.28	8.70	5.61	6.90	31
14	12.17	12.75	9.28	9.46	6.44	7.37	24
15	12.33	12.58	9.44	9.53	7.61	7.79	19

*An age level included two months. Thus the first age level includes the first and second months of life, etc. Since the total age range is 30 months, there are 15 age levels.

cant well beyond the .01 level of confidence. This means, of course, that the differences among the initial, medial and final consonant type values are acceptable statistically and separate equations should be derived from each array of means in Table 1.

From the mean values in Table 1, two sets of equations have been derived by the method of least squares, one for each of the three positions using 18 cases at each age level, and another for each of the three positions using the total number of cases at each age level. The equations are found in the following tabulation.

18 Cases

$$I_T = .72\ A + 1.63$$

$$M_T = 3.46\ A^{.443} - 2.26$$

$$F_T = 1.40\ e^{.126A} - 1.50$$

All Cases

$$I_T = .75\ A + 1.78$$

$$M_T = 4.25\ A^{.403} - 3.04$$

$$F_T = 1.42e^{.113A} - 1.60$$

Where I, M, and F are the positions, the subscript T refers to type, A=Age, and e=2.71828.

The nature of the course of development of consonants in the three positions by infants during the first two and a half years is indicated in Figure 1. The curves in this graph are based on the means of the 18 cases. It is apparent that initial consonants exceed both medials and finals and that the curve is linear. Medial consonants

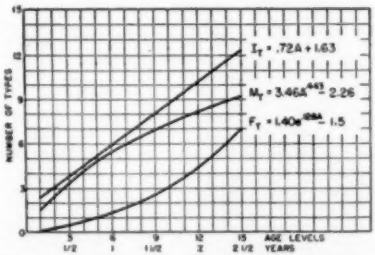

FIGURE 1. Development of consonants in three positions, initial, medial, and final, during the first two and one half years of life; 18 cases.

TABLE 2. Analysis of variance of initial, medial, and final consonant types. 15 Age Levels.

Source	*df*	*SS*	*Variance*
Age	14	13,800.29	985.73
Position	2	8,051.22	4,025.61
Interaction	28	804.76	28.74
Within Cells	2,187	12,986.03	5.94
Total	2,231	35,642.30	

Interaction: $F = \frac{28.74}{5.94} = 4.84$ .001 = 1.00 when $df = 28$ and 2,187.

Position: $F = \frac{4,205.61}{28.74} = 140.07$ .001 = 8.93 when $df = 2$ and 28

Age: $F = \frac{985.73}{28.74} = 34.29$ .001 = 4.11 when $df = 14$ and 28.

exceed finals but their course of development proceeds at a decelerating rate. The curve for the final consonants shows that these sounds are negligible during the first half year of life and then are mastered at an accelerating rate.

In order to check the above results, graphs were also constructed using the equations derived from the data based on all cases observed. It is seen that the pattern of development as revealed by the curve in Figure 2 is quite similar to that in Figure 1. The only difference is that the second set of curves is slightly higher than the first. Thus the curves based on all the cases confirm those based on the limited number of cases.

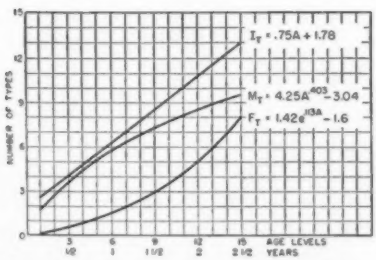

FIGURE 2. Development of consonants in three positions, initial, medial, and final, during the first two and one half years of life; all cases.

Summary

Concerning the nature of progress by the infant of consonants in the three positions, the available evidence indicates that the course of development of initial consonants during infancy is linear, that of the medials is decelerating, and that of the finals is accelerating. Furthermore, the occurrence of initial consonants in infant vocalization is greater than medials and the latter is greater than the finals. Final consonants are infrequent in the speech patterns during the first half year of life.

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A Device For Continuously Variable Time Delay Of Headset Monitoring During Magnetic Recording Of Speech

Grant Fairbanks
Robert Jaeger

RECENTLY INTEREST has been shown in the vocal disturbances which are produced when a time delay is introduced into the auditory feedback circuit of human speech. The phenomena have been described verbally and discussed by Lee (*2, 4*), who has also reported data on one of the features of the disturbance, retardation of vocal output (*3*). In a subsequent study (*1*), Black measured intensity as well as duration.

Apparatus for production of the time delay has employed magnetic tape recording. The output of a reproduce head, located down-tape from the record head, is amplified and fed into a headset which is worn by the subject while recording. The subject thus hears his own recorded speech delayed by the time required for the tape to move from the record head to the reproduce head. Lee employed an unmodified Presto PT-900 three-head recorder, with two recording and two fast-forward tape speeds, to produce discrete delay intervals of .04, .08, .14, and .28 sec. based on speed of tape travel. In Black's apparatus an endless loop of tape traveled over the heads at a constant speed. Continuously variable time delays from .02 to .35 sec. were produced by varying the distance separating the record and reproduce heads.

The device described in the present article, although developed independently, uses the same principle for continuously variable control over the delay interval as does that of Black. It appears to differ in that it consists of a variable three-head recording pathway assembled with the units of a commercial recorder in such a manner that either the time delay device or the normal recording pathway may be used alternatively. Thus the vocal product of a subject may be stored for subsequent analysis, and ordinary use of the recorder is always conveniently possible. As described herein the device is an adjunct to rack-mounted recording units; a portable version was demonstrated at the annual convention of the American Speech and Hearing Association on November 9-11, 1950, in Columbus, Ohio. The assembly of components specified below is notable for high fidelity, reliability, and flexibilty of control over experimental variables.

A block diagram is shown in Figure 1. Components are as follows: Microphone, Altec M-11 System, fitted with

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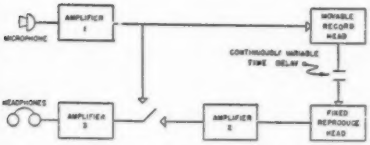

FIGURE 1. Block diagram of main components.

a blast screen for close talking; Amplifier 1, Magnecorder PT6-R Rack Mount Amplifier; Movable Record Head and Fixed Reproduce Head, 91-6016 Record-Reproduce Heads; Amplifier 2, PT6-P Portable Mixer-Amplifier; Amplifier 3, Goodell AB-3 16-watt Power Amplifier; Headphones, Permoflux PDR-10. Other essential components not shown in Figure 1 are a Magnecorder 91-6017 Erase Head, a PT6-A Recorder Mechanism, and a PT6-M Auxiliary Spooling Mechanism. The duration of the continuously variable delay symbolized at the right is a function of the distance between the two heads, as described below. The switch provides selection of either direct or delayed monitoring, levels being balanced at Amplifier 2. Other units, such as noise generators, filter systems, volume limiters, etc., are introduced into the circuit as desired.

Figure 2 is a drawing of the time delay device. From the supply reel the tape passes around the upper roller at D, and moves over the erase head (C), movable record head (A), fixed reproduce head (B), and right roller. It then descends to the drive capstan (F) and idler pulley (E), and returns upward to the takeup reel. When it is unnecessary to store the signal an endless loop of tape may be passed over the unit and allowed to dangle below, where a light, sliding weight slung from the bottom of the loop maintains tape tension. In that application the tape passes over the top of the lower roller at the left.

Components of the device are mounted on a standard strip of 3½" aluminum rack panel slotted at G. Both record and reproduce heads are used without their bakelite holders in order to permit closest approximation, and both are shielded with mu metal. The undesirable effects of the erase field are minimized by locating erase head (C) and reproduce head (B) approximately 15" apart. The base of the movable record head assembly is a rectangular sheet of aluminum, which is kept in vertical position and prevented from twisting by two rods projecting snugly through the slot (G). It is retained flush against the face of the rack panel by helical springs, slipped over the rods from the rear and compressed between the rear surface of the panel and nuts on the rods. In order to provide the optimum tape angle at the record head a polished rod, under which the tape passes, is mounted immediately to the left of the head as shown.

The record head assembly may be slid to any desired position between the erase and reproduce heads. At the extreme right the gap-to-gap distance between record and reproduce heads is 1.25"; at the extreme left it is 13.5". With a standard tape speed of 15"/sec., for example, a continuously variable range of time delays from approximately 0.08 sec. to approximately

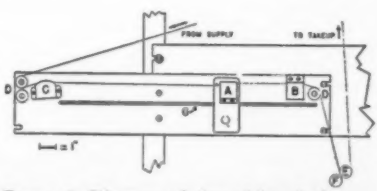

FIGURE 2. Diagram of time delay device.

0.90 sec. is thus provided. Proportionately higher or lower values are obtained by varying tape speed, while the range is extended at the long end by means of a system of rollers not shown[1]. The device introduces no measurable change in wow, flutter, or average tape speed.

In the rack the time delay is mounted between the PT6-M spooling mechanism above, and the PT6-R amplifier below, the latter containing the PT6-A recorder which is used for its drive mechanism only. In order to permit a straight tape pathway from capstan to takeup reel, the device is displaced to the left, projecting about 7½" beyond the rack, as shown in Figure 2. It is mounted at the lower edge of a 5¼" foundation rack panel, thus simplifying its relationship to the reels of the PT6-M, and spaced out into alignment with the other units. These arrangements permit conventional operation of both PT6-A and PT6-M when the time delay feature is not in use.

[1]At the longer delay intervals, incidentally, the device is highly useful for practice in speech, the immediate playback being advantageous to learning. Used as a reproducer with a loop of tape it is a convenient repeater for training or experimental purposes employing signals of short duration.

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Letters To The Editor

IN MY 11 YEARS of experience as a speech correctionist, it has come to my attention very frequently that, while most speech pathologists employ the terms *stutter* and *stuttering*, most patients prefer the terms *stammer* and *stammering*. Since there is no difference in the meaning, as far as we are concerned, why can't we adjust our terminology so as not to offend the sensibilities of our patients and their relatives. Apparently 'stutter' suggests a more advanced stage of the condition. In any event it is a less euphonious word. Possibly many prospective patients unconsciously choose the quack stammering schools because most acceptable speech clinics only correct stuttering. The average well-qualified speech therapist is probably afraid to use the term *stammer* because of the unfavorable connotation of the word mainly among ourselves. I would be interested in hearing the opinion of others on this matter.

MARY HUBER
Morrison Center for Rehabilitation

THE STUTTERER, and indeed all people who speak, are troubled or frustrated by the interrupting answer to their unfinished questions. We all attempt, more or less, to ignore these interruptions and to maintain our speaking and emotional equilibrium. A search for the answer or partial answer to these interruptions, however, has been carried on for years.

A common entry in the list of complaints of people who stutter is the anticipating answer or the anticipated question. We who stutter dislike the teacher, girl friend, or teammate who engages in this mind reading. We have aired our views often enough that a rule of thumb in clinical practice is: *Don't interrupt the stutterer.* Why not? Is the use of language to show off the ego of the stutterer (or anyone else), or to get an idea across?

It took very few hours to change my attitude toward the anticipating answer. I listened to Dr. Harvey Fletcher lecture on 'Information Theory' and got the idea of redundancy in language. Then I read Wiener's *Cybernetics* and Shannon and Weaver's *The Mathematical Theory of Communication*. Part of the interrupting that had been bothering me became clear and quite understandable. It was due to the redundancy of our language. All of us are familiar with the simplest example of redundancy: the *u's* after *q's* in writing; *q* is always followed by *u*. Speech abounds with similar examples. Some of them we call context. 'Where are you g...?' This beginning conveys a pretty certain idea, whether the final sequence of sounds is masked by noise, distorted by stuttering (or any other speech anomaly), or missing altogether. Other examples may fall short of context in the sense of a connected sequence of words. The analogue within the word makes up a large part of redundancy. Language is only a coding system, and all we need in the communicating process is enough of the code to permit the listener to decode the transmission.

In speech therapy we teach the person with the speech defect to practice

objectivity. This word *objectivity* is all too often a piece of verbal advice without a referent. We can supply one in the 'anticipating' instance by helping the stutterer gain insight into the redundancy of language as a partial explanation of the interruptions that he receives daily. We who stutter can learn to accept the interruptions more readily and in the spirit in which they are often given if the language of our society is clear to us. This understanding of redundancy is fostered somewhat in the study of speechreading, in which one decodes spoken language through identifying key words. The repetition of key words is itself convincing evidence of the redundancy in our language.

Finally, the stutterer should note that 'being cut off' is a general experience, not reserved for the person with a speech defect. People with normal speech have the same experience and they may be frustrated or not, depending on whether their language is ego-oriented or not.

True, it is considered more polite to wait for the person to finish talking before we answer, but this social rule does not contain our thinking, and frequently, the expression of that thinking. Why get upset then? We have learned a redundant language. As we learn more and more about the extent of its redundancy we may be able to accept more and more the unintentional ellipses that our listeners carve from what we had intended as sentences.

KEITH K. NEELY
The Ohio State University

Book Reviews

UTLEY, JEAN. *What's Its Name?* Urbana, Illinois: University of Illinois Press, 1950. Pp. 172.

This is a ring-bound workbook containing large, black outlines of 676 pictures, 17 of which illustrate eight nursery rhymes and nine stories. The pictures are arranged in groups, such as toys, food, animals, furniture, colors, people, action words, etc. The words naming these pictures are in one and two syllables, and are printed below the pictures in large, heavy, black type. The words are arranged in order of increasing difficulty. The vocabulary is carefully selected for lipreading, hearing and functional use. The pictures are excellent. They are simple, with no distracting, extraneous features. They are readable, attractive and interesting for a small child.

Words are introduced in pairs to develop auditory discrimination. These are well chosen for the various vowels and consonants. The phonograph records that accompany the latter part of the book are an invaluable addition to the lessons. The recordings of animal voices and sounds of everyday life are especially delightful. These are often difficult or impossible to bring into the classroom, but need very definitely to be a part of the child's knowledge.

Dr. Utley's introduction contains her philosophy regarding initiating speech development very early in the child's preschool days. Emphasis is placed on training to the fullest whatever hearing the child possesses. The author is clear, precise and up-to-date and emphasizes the need for considering the hard of hearing or deaf child as a normal, happy person in his own right, rather than as an adjunct to an unfortunate handicap.

There are two precautions which should have been emphasized in this book. One is that verbs cannot, by any stretch of ingenuity, be thoroughly illustrated pictorially. Dr. Utley has done well, but she should emphasize the need for dramatizing the action in many ways in addition to the picture in the book. Otherwise the child will not have a true concept of the real meaning of the verb. The second warning is that no child, no matter how young, should be kept long on the use of single words, merely as vocabulary. In fact, words should not be used singly at all except briefly for introduction and review. Each word learned must be incorporated very quickly into simple sentences that relate closely to the child's daily experiences. Otherwise the child may become a word reader rather than a language user.

Dr. Utley is to be congratulated upon the production of a work that is thorough, scientific and usable. It should fill a real need for teachers and parents of small children with a hearing loss.

WARREN H. GARDNER.
Cleveland Hearing and Speech Center

JURGENSEN, HANNAH. *Sprach-Störungen in der Volksschule.* Hamburg, Germany: Herman Laatzen Verlag, 1948. Pp. 47.

Sprach-Störungen in der Volksschule is one of a series of educational pamphlets under the editorship of Erich Scharff. It appears to have two purposes: first, to set forth the rationale and practices of speech correction in the public schools of Hamburg, Germany; and second, to serve as a hand-book for the use of non-specialized classroom teachers in recognizing, studying, and treating the cases of speech disorder that he may discover in his class. (The consistent use of the masculine gender in referring to the teacher may strike the American reader as significant, as, indeed, it may be.)

The exposition of Hannah Jürgensen is direct, straightforward, orderly, and well suited to the purposes for which the text was written. The book contains chapters on the nature of speech, the significance of speech disorders, rehabilitation of speech disorders in the school, normal speech, disordered speech, speech hygiene and speech correction in the public school.

Book Reviews is edited by Kenneth Scott Wood, University of Oregon. The first 12 reviews in this issue and the Film Reviews were prepared under the editorship of Ernest H. Henrikson, University of Minnesota, who has recently retired as Book Review editor.

The specific types of speech disorder mentioned are: auditory defects, retarded speech, avoidance of speech (Freiwilliges Schweigen), agrammatisms, dyslalias (Stammeln und Lispeln), nasality, cleft palate, stuttering, overrapid speech (Poltern), dysphonias.

To those who have read Frau Jürgensen's literature—Wundt, Gutzmann, Froeschels, Liebmann, Nadoleczny, u.s.w., most of what she says will seem quite orthodox; though, to some, one or two passages will seem strikingly pointed. For example, under the heading of stuttering, she says that stuttering children should in no case remain in the public school. Then, again, under the heading of 'the speech of the teacher,' we have a reflection of what is strikingly similar to the attempt on the part of the New York City school system to indoctrinate the children with a standard pronunciation. In Hamburg the attempt is to get the teacher to combat with his 'Hochsprache' the influence of the common speech that the child hears 'in hause.'

For the American reader with a background in the history of the development of speech correction in Germany the book is interesting reading. Otherwise, its practical use is limited to the Germans for whom it was written.

ROBERT WEST.

Brooklyn College

HUBBELL, ALLAN FORBES. *The Pronunciation of English in New York City*. New York: Kings Crown Press, Columbia University, 1950. Pp. 169.

The speech of the 30 two-generation New Yorkers herein described is neither 'Eastern,' 'Southern,' nor 'General American,' but shares features of all and possesses certain characteristics of its own. The author, a native of Brooklyn, defends his native dialect against the 'elocutionists' who disdain anything other than southern British usage, doing what Kenyon has so ably done for 'General American' speech. The student of phonetics will be interested, stimulated, and occasionally perplexed by this book. The phonetic description, sound-by-sound and subject-by-subject, is detailed and thorough, but some may share the reviewer's feeling that certain IPA inaccuracies are herein further confounded and that new symbols used do not contribute enough to counterbalance the confusion they may cause now and in later years.

There is no geographical division of dialects in New York City. The 'Brooklyn accent' is simply uncultivated New Yorkese, heard in all boroughs, Jersey City, and Hoboken. The pronunciation 'boid, thoid' commonly associated with New York speech are, of course. seldom actually [bɔɪd] or]θɔɪd], but rather [bɜɪd] or [θɜɪd]. These pronunciations are found in cultivated speech of older New Yorkers, but younger people generally pronounce [ɜə] or syllabic [r] in these words.

The author believes that most New Yorkers omit [r] before consonants (as in *board*.) Intrusive [r] is very common in the speech of the city as a whole (*law-r, Utah-r*). Yet, there is great haphazardness in this regard, due to General American influence. The pronunciation of *point* and *joint* with syllabic [r] is very rare.

Words with *wh* are usually pronounced with [w], regularly so by uncultivated speakers. *New, tune, duty*, etc., are regularly pronounced with [u] by the uncultivated, but [ju] is heard sporadically on higher culture levels due partly to 'Websterian respellings which only phoneticians understand.'

Many uncultivated New Yorkers are reported to produce [s] decidedly more prominently than normal and to aspirate stop-plosives quite forcefully. Reaction to this fact may explain the tendency of some speech teachers in the New York City area to weaken these sounds unduly.

[æu] for [au] is found chiefly among young people. The opposite tendency to [ɑuʃ] is quite common.

Alveolar consonants are said to be pronounced frequently with the blade of the tongue, the tongue tip being held behind the lower incisors. This results in an affricate-like quality of [t]. [aɪ] is frequently retracted to [ɑɪ]. 'Many New Yorkers, and this is perhaps the commonest pattern of all, especially on the intermediate levels of metropolitan speech, pronounce [ɛə], [ɛˈ], [æə], [æˈ] in words like *glad, stand, jazz*, in an extremely haphazard fashion.' The intermediate vowel [a] in the 'ask words' is not native to New York City.

The author places a breve above the second element of diphthongs to indicate that these final sounds are integral parts of the diphthongs and not their usual pho-

nemic selves. This seems to the reviewer to be unnecessary complication. We see definite inaccuracy in the author's representation.

The reviewer particularly likes Hubbell's statement about syllabic [r] (p. 49):

> Bloomfield conceives of the syllabic in such words [General American *first, turn*] as an allophone of [r] (the only regular case in English of a stressed syllabic consonant) and transcribes [tṛn], [fṛst], etc. Kenyon's method of transcription seems to me unfortunate because it obscures the connection between the syllabic of *turn* as pronounced in the G.A. manner and the initial phone of *red*, a connection that even an illiterate speaker would, I believe, be aware of.

The reviewer shares this view. The symbol of the phonetically powerful consonant which has, over the years, completely assimilated its neighboring vowel should be retained and decorated with a subscript in recognition of this accomplishment!

JACK C. COTTON.
State University of New York

PASTORE, NICHOLAS. *The Nature-Nurture Controversy*. New York: King's Crown Press, 1949. Pp. 213.

Pastore examined the writings of 24 scientists to determine whether there was any significant relationship between their emphasis on nature or nurture and their particular socio-political orientations. The scientists are all either Englishmen or Americans; their writings were produced during the period 1900-1940. He divides the scientists into two groups, the environmentalists and the hereditarians.

Pastore concludes that among the environmentalists, all but one, John B. Watson, could be classified as liberals or radicals. Watson is described as 'an extreme environmentalist.' With regard to socio-economic views, his (Watson's) position is ambiguous and inclined in a conservative direction. In contrast to the general liberal political position of the environmentalists, Pastore characterizes the hereditarians as generally conservative. The exception is Lewis M. Terman, who is considered by Pastore to be a political liberal. As representatives of the environmentalist position are William C. Bagley, Franz Boas, James McKenn Cattell, Charles H. Cooley, Frank N. Freeman, J. B. S. Haldane, Lancelot Hogben, Herbert S. Jennings, Hermann J. Muller, George D. Stoddard, Lester F. Ward, and John B. Watson.

An environmentalist is characterized as 'one who accepts statements of the following type: "Environment is more important than heredity; existing individual and group differences reflect (much more than is commonly thought) differences in opportunity; innate characteristics are easily modified. . ."' In the introduction Pastore emphasizes that the environmentalist does not necessarily deny the influences of heredity. Neither does the heredetarian necessarily deny the influence of environment. 'The relevant point concerns the emphasis of the individual on matters of controversy.'

An hereditarian is described as one who accepts statements of the following type: 'Heredity is more important than environment; individual and group differences are the result of innate factors (either in totality or predominantly); innate characteristics are not easily modified.' Among the scientists who, as a group, emphasized hereditary influences and tended to minimize the effects of the environment, are William Bateson, Charles B. Davenport, Edward M. East, Francis Galton, Henry H. Goddard, Leta S. Hollingworth, William McDougall, Karl Pearson, Paul Popenoe, Lewis M. Terman, Edward L. Thorndike, and Frederick A. Woods.

Pastore points out that 'the median birth dates of two groups are approximately equal —1871 is the median birth date for the hereditarians and 1875 is the median birth date for the environmentalists.' This reviewer noted that as of the date of the writing of the review, June 1950, three hereditarians were still alive compared with six environmentalists.

Although the *Nature-Nurture Controversy* has no direct bearing on the work of the speech clinician, it is a book recommended for general reading. From Pastore's carefully documented book, one learns or one appreciates that scientists are not above using conventionally objective procedures (including statistical treatment of data) to support subjective reactions and long standing biases. Even so noteworthy a scientist as Karl Pearson is able to have his wishes become dominant in interpreting his own statistical data. Pastore points out that 'Pearson's errors of logic, his interpretation of the data, and the direction of his con-

clusions, all tended to support a particular attitude toward immigrant group.'

Probably with an opposite motivation, we find that Franz Boas attacks not the data of the hereditarians so much as their conclusions. Boas raised questions as to why some anthropologists took certain measurements, 'why they were considered significant, and whether they were subject to outer influences.'

It is unfortunate that Pastore considered no writings published after 1940. Because of this stopping date, none of the literature is reviewed on the nature-nurture controversy recently precipitated by Lysenko's attack on the Weismann-Morgan theories of the immutability of the germ plasm. It would have been interesting to know what some of our contemporary and younger scientists think about Lysenko's—and the U.S.S.R.'s—contention (as of this date) that 'the germ plasm, like every other living substance in plants and animals, inevitably changes in adaptation to surroundings of nutrition and sustenance' and that 'new characters acquired by organisms in the course of their development under the influence of a changed environment are transmitted to the offspring.'

The reviewer would like to see a general semanticist go over the many quotations (and if possible the entire original writings of the selected scientists) to evaluate how much of the apparent difference of opinion and position could be reconciled through proper definition of terms. In fact, before it is too late, the reviewer would like especially to see that done with the writings of others in addition to the American and English scientists.

Jon Eisenson.

Queens College

Anthony, Catherine Parker. *Textbook of Anatomy and Physiology*. St. Louis: C. V. Mosby Co., 1950. Pp. 614.

This book, written primarily for students of professional nursing, follows the same design as that of the two previous editions, including such features as an outline survey and list of new terms at the beginning of each chapter, and a detailed summary in outline form together with a list of review questions at the close of each chapter.

Suggested supplementary reading for each chapter is placed at the end of the book. Specific pages for each of several reference books are indicated which should be very valuable to students who wish more than an introductory discussion of any area of the text.

Physiology has been given even greater emphasis in the third edition than in previous editions. The section on the heart, for example, now includes an adequate introductory consideration of each of the several reflexes which produce changes in heart rate. Other subjects which have had major changes and expansion include muscle and nervous tissue activity, metabolism, heat regulation, and endocrine functions. Not only is there more complete information given regarding the pituitary and adrenal cortical hormones but the newest edition also describes briefly some of the major conditions resulting from endocrine dysfunction. The placenta is now included as a temporary endocrine gland.

Eight new tables have been added to those which have already proved to be valuable learning aids in previous editions. In Table XXX the uncommon use of the word 'same' in place of ditto marks could be more quickly understood if the usage were explained in a footnote. The generous number of thoughtfully selected, well labeled, and clearly printed illustrations has been further augmented by the addition of several new ones which should prove especially helpful.

For students of speech pathology the book offers a clear and concise general presentation of human anatomy and physiology. It lacks specific discussion of the anatomy and physiology of structures involved in speech production except for a very brief description of the vocal cords and two sentences of reference to other related structures of the respiratory system which determine the quality of the voice.

Although the new edition contains 72 more pages than did the previous edition, the dimensions of the book remain the same. The gray binding with red lettering gives a refreshing appearance which should stimulate a desire to use the book. The printing is clear and the material is organized into helpfully small units each of which is well delineated by the use of heavier type and italics. The majority of the illustrations are in the form of drawings by which it is possible to identify structures more easily for introductory learning than is possible by most photographs. The re-

visions found in this third edition should enhance the value of the book which has already become established as a valuable text in anatomy and physiology for student nurses.

MYRTLE H. COE.
University of Minnesota
School of Nursing

CHAPPELL, MATTHEW N. *In the Name of Common Sense, Worry and Its Control.* (Rev. ed.) New York: The Macmillan Company, 1949. Pp. 172.

This volume, written for laymen, is a revision of a volume published in 1938 designed to be used by medical men only. Practically all technical words from psychiatry and neurology have been eliminated.

The author encompasses most of the emotional disorders (except the psychoses) under the subject of worrying. The whole area of personal-social adjustment, including many disorders commonly labeled neurotic, is discussed. In fact, the book might perhaps just as well be labeled as one pertaining to the improvement of personality adjustments in adults.

The theme of the book is that worry or any other emotion is built up and maintained by practice. The author maintains that improvement comes as one permits fear, anxiety, and anger to die out by disuse and substitutes more constructive habits of thinking and feeling. Most worriers have arrived at the disabilities by years of practice—they become highly accomplished in this.

The author emphasizes throughout the book that worriers should not talk to others about their troubles. In doing this they make themselves worse. He points out that speech has a greater effect on the brain and body than silent thinking. Some psychologists and general semanticists would not agree with the author's advice on this point. They would teach the patient to talk about himself with discernment by teaching him a knowledge of his mechanism of self-reflexiveness. With such a knowledge he could talk himself out of his difficulty.

According to the author, anyone who has enough intelligence to acquire all his fears and tensions has all of the mental equipment necessary to do away with them. Yet the more 'will-power' the worrier uses, the worse he usually gets. Attempts to control emotion with effort increase the emotion. The relation of fatigue from physical exercise to the fatigue from emotion is close. In fact, both sorts of fatigue come from the same glandular over-functioning.

The 22 chapters contain illustrations from a large number of patients with whom the author has worked in his practice as a consulting psychiatrist. The book is clear, simple and readable. The author is frequently severe but he shows a sense of humor at many points also. The volume would probably be of value for a good many adolescent and adult stutterers and others with speech disorders.

ELWOOD MURRAY.
University of Denver

BETTLEHEIM, BRUNO. *Love Is Not Enough.* Glencoe, Illinois: The Free Press, 1950. Pp. 386.

This report on the work with severely disturbed children at the University of Chicago's Orthogenic School will be of interest to anyone who has had contact with youngsters. In Dr. Bettleheim's unusually difficult group of children, one can recognize similarities to the relatively normal youngsters of one's own experience. For that reason, despite the fact this book has no specific reference to problems in the area of speech, it will be interesting supplementary reading for the speech pathologist. The speech pathologist will frequently have contact with children whose difficulties are expressed in the area of speech but whose basic problems may differ only in degree from those of some of the School's children. For example, the child described in this study as being so anxious about himself that he feels it safest to do nothing, will many times have been observed as a problem of delayed speech.

Love Is Not Enough is, in the main, a picture of the everyday activities of the Orthogenic School children. The School is organized in such fashion that these activities and the situations arising during them can be utilized as a definite part of the treatment set-up. The child can be helped directly within a disturbing situation, and the counsellors are able to observe clearly how previous experiences influence the behavior of the moment. All of the aspects of the child's life from his rising in the morning to his going to bed at night can thus be utilized in helping him to integrate his personality. There is no need to resort to symbols taken out of context as is done in many treatment settings, nor is

there need to rely either on the adult's reflections about the child's reactions or the child's re-enactment of disturbing events. It is pointed out that this close observation of and working with the children serves a broad purpose. Not only is the individual child benefited, but the study of his difficult behavior aids in the understanding of simpler but basically similar problems in normal children. In addition, techniques of management are demonstrated which may be of aid in avoiding the development of similar problems, or in helping handle them as they do develop. In this respect this 'laboratory school' has preventive as well as ameliorative aspects.

The School's efforts favor the development of ego strength directly rather than through uncovering of the unconscious. The treatment approach is described as, in the main, psychoanalytic, however, although the method used is conditioned by the specific problem at hand. The techniques used might be fraught with danger in the hands of less well-trained and experienced personnel. The School's highly skilled staff seems to have struck an excellent balance, however, between allowing the children to express their feelings freely and the setting of limitations. These children are thus protected from acts into which they might enter through impulsiveness rather than actual desire. Permissiveness is never extended to the point that the child becomes anxious and afraid. It has been discovered, however, that the more leeway given a child in asserting himself in those areas which are closely related to his problems and in which he needs it the most, the more cooperative he will be in other areas. In connection with this, it has been found that children who have successfully outgrown one emotional or learning difficulty many times are the best persons to help other children with similar problems. The lack of rigidity in the School's group activities allows for such relationships between children. It seems therapeutic for the less disturbed child to be able, in a sense, to fight his own problems in others rather than in himself, as well as supportive for the more seriously upset child.

In summary, this report on the Orthogenic School describes the striving to help the child in real situations to solve very real and immediate problems. Therapy is not restricted as to time or place but becomes a part of the child's everyday living. The goals seem realistic in that no attempt is made to recreate a 'perfect' child but merely to help the child in developing ego strength and to aid him in forming relationships to at least a few other people. The School tries to help the child learn to accept himself as he is and to make the best use of his individual assets within the limits of what society and he, himself, expect. Despite the fact that the Orthtogenic School is a very unusual and special setting, an evaluation of its goals would seem of value to all those who work with youngsters, regardless of their particular frame of reference.

AUDREY ARKOLA STENBERG.
University of Minnesota
School of Medicine

HENRY, NELSON B., ed. *The Forty-ninth Yearbook of the National Society for the Study of Education, Part II—The Education of Exceptional Children.* Chicago: University of Chicago Press, 1950. Pp. 350.

This yearbook was prepared on the initiation of a letter on behalf of the International Council for Exceptional Children to the Board of Directors of the National Society for the Study of Education. The Society's Committee consisted of Harry J. Baker, W. W. Charters, Elise H. Martens, Edward H. Stulken, and Samuel A. Kirk, chairman.

The publication is directed to school administrators and teachers who are unfamiliar with diagnosis, indicated therapy, and recommended programs for exceptional children. The nature of the problems with which a school is confronted in adequately meeting the needs of exceptional children is followed with consideration of procedures and methods which have been found effective in various school systems.

The regular classroom teacher will find help in adapting her instruction and procedures to the needs of pupils with handicaps. She will find further help in the matters of identification and referral. The teacher of a special class or the clinician of a special group will find assistance not so much in teaching his particular area of specialization but in understanding the many children under his direction with multiple handicaps. In this manner the book will be valuable to all teachers of special classes and to all specialists working with exceptional children. The speech clinician sometimes is

not fully cognizant of the problems of the partially-seeing, the mentally retarded, and the orthopedically handicapped who may also have speech defects. This teacher will also find help from the discussion of organization of classes and services available for his own field of specialization.

The *Yearbook* is a must for students in universities or teachers colleges who are considering a career in special education. The publication will no doubt be widely used in survey and orientation courses in the education of exceptional children. Specialists who are recognized for their programs, writings, and research are responsible for the respective chapters.

There are three divisions to the publication. Section I gives the reader an over-all picture of general concepts and problems pertaining to all groups of exceptional children: Basic Facts and Principles, Administration, Identification and Diagnosis, Growth Patterns, Guidance, Education of Teachers, and Parent's Problems. Section II considers the Nature and Needs of Specific Groups: Vision, Hearing, Speech, Orthopedic and Cardiac, Epileptic, Tubercular and Glandular, Mentally Handicapped, Gifted, and Socially Maladjusted. Section III considers some Future Developments in chapters on Prevention and on Needed Projects and Research. The appendix includes a valuable list of agencies and associations primarily interested in the welfare of exceptional children.

Wendell Johnson, of the State University of Iowa, is responsible for Chapter 10 on 'Teaching Children with Speech Handicaps.' Dr. Johnson discusses the various types of speech defects found in the school population, the basic problems involved in dealing with those children, and the basic principles of public-school speech correction. He emphasizes throughout this section 'that the degree to which they are handicapped depends upon the administrative policies, classroom procedures, and teacher personalities by which they are affected.'

Clarence D. O'Connor, Superintendent of the Lexington School for the Deaf, New York City, and Alice Streng of the State Teachers College, Milwaukee, Wisconsin, prepared the chapter on 'Teaching the Acoustically Handicapped.' In the attempt of the authors to tell the complete story of the acoustically handicapped in 12 pages, the administrator and the classroom teacher may have some difficulty with 'decibels,' 'frequency sounds,' and 'audiometers.' Much excellent information on the acoustically handicapped, however, appears in this chapter. In 'A Look to the Future,' the authors suggest that we know comparatively little about testing the hearing of very young children, the age at which audiometric testing can be considered valid, what lip reading is and how to acquire this skill. They also invite study into the matter of 'standardization of psychological and achievement tests which can give us deeper insights into the problems of the deaf and the hard-of-hearing.'

Among the other 30 contributors to this *Yearbook* are such well known names as William M. Cruickshank, Ray Graham, Francis E. Lord, Jayne Shover, George S. Stevenson, Berthold Lowenfeld, and Anna M. Engel. If there is any inconsistency in the *Yearbook* it is that some sections are much more technical than others. This is the exception, however, rather than the rule. The reader will have very little difficulty and will gain much valuable help with the understanding and treatment of exceptional children. Students in special education will find the book a valuable reference source.

Darrel J. Mase.

University of Florida

UNESCO Relations Staff. *The UNESCO Story*, A Resource and Action Booklet for Organizations and Communities. Washington, D. C.: The U. S. National Commission for UNESCO, 1950. Pp. 288.

> I attach the greatest importance to this agency. . . The Government of the United States will work with and through UNESCO to the end that the minds of all people may be freed from ignorance, prejudice, suspicion, and fear, and that men may be educated for justice, liberty and peace. If peace is to endure, education must establish the moral unity of mankind.

These words spoken by President Truman on signing the Congressional measure authorizing U. S. membership in UNESCO are the opening words of the book. And although in these days of gloom the task seems all but hopeless, its accomplishment is, nevertheless, the only hope the world has of survival.

The book is divided into three main sections. Part One deals with the general goals of UNESCO, which are summarized in the book as follows:

> Stimulation of world-wide efforts to wipe out illiteracy as a first step in raising the standards of living. . . The broadest use of schools, libraries, press, publications, films and radio for the spread of knowledge and understanding among peoples . . .
>
> Encouraging the world-wide interchange of ideas and cultural achievements . . .
>
> Stimulating the cooperation of scientists and scholars and making available the results of their research . . . Identifying and helping to remove social, religious, and racial tensions and combating the prejudices and ignorance which hinder friendly relations . . .

These main purposes are elaborated briefly to show how UNESCO has proceeded to implement these goals. While some projects, such as the Marbial Valley project in Haiti and the Valley of the Amazon research project, have been undertaken directly by UNESCO, the main avenue of approach to these world problems has been through the coordination of other agencies already at work. Considerable progress has already been made on stimulating governments and private organizations to appropriate the money necessary to carry out projects designed to promote world peace and understanding.

Part Two is devoted to setting forth the accomplishments of UNESCO in the United States. The work of the parent organization is carried on in our country by the U. S. Commission for UNESCO. Some 60 organizations have representatives on the Commission and 40 more members are appointed directly by the Secretary of State. The first national conference held in 1947 at Philadelphia drew 1100 delegates from national organizations, but the second conference held in 1949 at Cleveland had more than 2500 delegates in attendance. Twelve associated organizations reported having spent over $1,000,000 on projects promoted by UNESCO. Ten state and regional organizations have been set up, and 40 local councils have been organized in Kansas alone, a pioneering state in this regard.

Part Three, which comprises the bulk of the book, is devoted to 'Working Toward UNESCO's Goals Through Community Action.' The work of the National Commission has been mainly organized about such projects as: Education about the U. S., Human Rights, Food and People, Exchange of Persons, and Educational Reconstruction. These are projects in which any organization or community can and is urged to share. The book proceeds to give examples of how these projects have been promoted in various communities and by schools and colleges in many places. One of the most interesting sections sets forth what has been done in the exchange of students by means of the Smith-Mundt bill and the Fulbright Act. In the present academic year, for example, 628 Americans are studying in 12 foreign countries under the Fulbright Act alone. This is an important way of sharing knowledge and furthering international understanding. There are many other ways, such as radio, newspapers, theatre, and community activities, suggested and described whereby every interested citizen can help to promote the work of UNESCO. The book is profusely illustrated with the activities of many of the cooperating groups.

Despite the fact that this approach to world peace and harmony is slow and discouraging, it is a movement that deserves the support of all, at least to the extent of learning what others are doing to attain its ambitious aims and purposes.

CLARENCE L. NYSTROM.
Wheaton College

LANDIS, CARNEY AND BOLLES, M. MARJORIE. *Textbook of Abnormal Psychology.* (rev. ed.) New York: Macmillan Company, 1950. Pp. 634.

The authors have revised their widely-used 1946 text, the major change being an incorporation of material based on a variety of new research findings of the last four years. The dual approach by way of considering both biological and social data relevant to abnormalities has been retained. Like the earlier edition, the revision is lucid, serious-minded, and eclectic. It soberly presents a broad survey of findings and hypotheses, leaving it to the instructor and reader, should they so wish, to impose a systematic theoretical viewpoint on the material.

The text is organized in a rather unique manner. Following an orientation section,

the second section contains 15 chapters, largely descriptive in nature, on the major varieties of mental abnormality. This is followed by five chapters examining biological and social explanations of abnormality, six chapters examining, from the special viewpoint of the psychologist, abnormal data presented in Section Two, and five chapters on diagnosis and therapy. The end result is a comprehensive and clear treatment.

A number of chapters not always found in an abnormal psychology text will very likely interest readers who do not have a primarily professional orientation toward psychology. Specifically, there is a chapter apiece on physical illness and physical handicap, and, in the last section, chapters on educational guidance and counseling, on the legal problems of abnormality, and on mental hygiene. The chapter on physical handicap has a nine-page discussion of the psychology of hearing disorders and a five-page discussion of the psychology of stuttering. The discussion of the law of abnormality is the best brief summary of the topic known to this reviewer.

In general, while the book does not have the liveliness and 'punch' of a more dynamically and theoretically oriented treatment, it can be highly recommended to the serious professional or non-professional reader who wishes to acquaint himself with historical and recent developments in abnormal psychology.

EPHRAIM ROSEN.
University of Minnesota

HARRIS, J. DONALD. *Some Relations between Vision and Audition.* Springfield, Ill.: Charles C. Thomas, 1950. Pp. 56. $1.50.

This very brief monograph (44 pages of text) is described in the introduction as 'a start . . . toward arriving at general principles of organization and theory of the whole sensorium.' As such it will be read with interest by workers in the field of audition whose contact with vision is limited to a course or two in experimental or physiological psychology. They may find it more frustrating than revealing, for most basic considerations are mentioned only briefly or disposed of in a few sentences.

Almost all of the areas in which comparisons of eye and ear can be made are mentioned, including sensitivity, intensity, differential sensitivity, energy integration, growth and decay of sensation, C.F.F., bilateral interaction, single nerve fibre activity and the ever-present quantum theory, which apparently is employed differently in vision and audition. The eye turns out to be a more discriminating organ in several ways, assuming that it is legitimate to compare the two modalities using different units. Of especial interest is a consideration of theoretical speculation and experimental evidence on intersensory facilitation. Both lead to no definite positive conclusion as to whether its existence has been demonstrated.

The usual errors are present, e.g., Békésy becomes Béséky in the references. But in view of its slight cost in an era of inflation, and the fact that it serves to raise numerous provocative questions, many professional workers in the field of hearing will want to own this book.

LEO G. DOERFLER.
University of Pittsburgh

Editor's Note. Due to the transition between Book Review editors, two reviews of the following book were prepared independently. It is often interesting to compare reviews of a book as presented in different journals. This situation allows the reader to compare different reviews of a book printed in the same journal. —*G.F.*

REISS, SAMUEL. *The Rise of Words and Their Meanings.* New York: Philosophical Library 1950. Pp. 301.

'Drink deep, or taste not the Pierian spring.'

Although in this frequently quoted line Pope was addressing himself to the users of words, his advice is much more to be heeded by those who write about them. For years many people have been writing popular and semi-popular books about language and language usage without more than a superficial knowledge of language. Their general purpose and effect have been largely to support the pre-scientific beliefs about language that prevailed in the mid-eighteenth century. Now, however, in serious guise appears a writer who offers ideas no less out of accord with established linguistic theory, but this time deviant in a startling different direction.

Samuel Reiss's *The Rise of Words and Their Meanings* is an amazing book—amazing like that of Ignatius Donnelly on the Baconian Cipher. For this reviewer, at least, it provided the same kind of horrid

fascination as that exerted by the electric machine which as a boy he found in a penny arcade and to the charged handles of which he held on in interesting agony through sheer inability to let go. In this book there is no easy resting-place before its extraordinary chapters have led one on inevitably to the sweeping synthesis that is its conclusion.

Modern linguistic science rests upon the basic assumption of the regularity of phonetic change. Though the Italian neolinguists have lately insisted upon certain types of exceptions, no linguistic scientist, it is safe to assert, would deny that in general phonetic change is regular and consistent and that statements of phonetic correspondence—or 'sound laws'—are limited in their application to the historical period in which the specific changes occurred.

At the very outset Reiss, however, not only blandly casts this basic assumption aside but also cavalierly treats as nonessential the whole structure of historical linguistic relationships, both with respect to phonology and with respect to semantic change. What he has left he calls the 'phoneto-semantic approach.'

So far as meaning is concerned Reiss says that historical change of meaning is unimportant. Any specific sense may at a given time become 'predominant,' but what is important is that all the various senses of a simple word, regardless of chronology, have a vaguely delimited 'conceptual element' in common.

Similarly with sound change, Reiss rejects genetic relationship and substitutes what he calls 'kinship.' Historical and comparative linguists, of course, have observed and recorded sound correspondences as occurring at various periods in both Indo-European and non-Indo-European languages. From statements of such observation Reiss chooses relationships with cheerful inattention to either time or place. To them he applies the principle that things equal to the same thing are equal to each other, and by ignoring gaps of centuries sets up a complex of relationships that permits a most unorthodox conclusion. He seems completely unaware of the basic linguistic truths which were expressed by the distinguished American scholar, the late Leonard Bloomfield, in his book, *Language:*

> Since a sound change is a historical happening, with a beginning and an end, limited to a definite time and to a definite body of speakers, its cause cannot be found in universal considerations or by observing speakers at other times and places.

Reiss finds, for example, that *f* at one time was 'related' to *b*, that elsewhere *b* was related to *kb*, *kb* to *k*, *k* to *p*, *p* to *m*, *m* to *ng*, *ng* to *g*, and *g* again to *k*, while *k* is also related through palatalization to *ch*, and hence to *t*, and hence to *s*, *d*, and *z*. Practically all consonants are thus equivalent to one another. He disregards vowels. Then, learning that somewhere and at some time initial and terminal consonantal inversion occurred in a certain word, he accepts the notion that such inversion is always possible. He adds to this engaging supposition the theory that initial and terminal consonant clusters also participate in metathesis and addition and subtraction with delightful abandon.

At this point Reiss finds it possible to set up within an area of 'kinship' such a group of English and Scottish words as these in what he terms the 'pat' family: pat, tab, bat, dab, beat, bash, jab, tup, put, butt, push, shove, cop, puck, cob, buck, cuff (At this point he seems to have pulled his punch!), whack, hack, paik, chop, peck, potch, chap, peg, butch, chip, bite, cham, chew, champ, and tew.

Now from all the range of meanings exhibited in the history of those words which he includes in a given kinship, and without any regard to the actual dates of occurrence as attested in the Oxford English Dictionary, Reiss proceeds to discover that each word and hence all the words have the common conceptual element of 'striking' or hitting. By a *tour de force* requiring considerable agility he even demonstrates to his own satisfaction that such non-action nominal terms as *boy*, *chunk*, *knave*, and *heart*, have this common conceptual element of 'striking.'

But Reiss is not content with 'proving' that all English words have this concept of 'striking.' He next looks at other Indo-European languages, including Sanskrit (which he seems to consider a kind of ancestor of English), and by the same intellectual legerdemain finds that similarly all simple words in those tongues have this same conceptual element in common and that 'within the limits of phonetic preference' his chain of phonetic resemblances also reaches across linguistic barriers. Nor is the author

to be deterred now from the ultimate triumph of demonstrating—again to his own satisfaction, at least—that in all simple words in all known languages there is only this one common conceptual meaning, that of 'making a striking action.' His examples he adduces chiefly from Chinese, with briefly appended illustrative lists of 'kinships' from Swahili, Hebrew, Hungarian, and Malay.

This book, quite literally, makes nonsense; yet it is issued seriously by a responsible publisher. One can only now express the vain regret that the author did not make an initial trial of his theories in papers read before such an organization as the Linguistic Society of America, of which he is not a member, or that the publisher did not check his own action upon the basis of informed criticism of the manuscript by two or three competent linguists. If either of these things had been done, in all likelihood the book would never have been published at all.

HAROLD B. ALLEN.
University of Minnesota

This provocative study is an exposition and defense of a method for language analysis called *phoneto-semantics*. Reiss feels that there is a 'linkage between the sounds of words and their meanings,' transcending the usual limits of onomatopoeia, so that the twin studies of phonetics and semantics must be fused. In this volume, he examines the fusion in order to find the 'possible scope of phonetic changes that might be exhibited by words together with the possible scope of meaning that could be associated with the words.' He also examines the 'sound kinships' and 'preferences' within the several languages. By means of *phoneto-semantic* analysis, the relationships between words within and among languages can be determined, once the sound preferences of the particular languages are established. Reiss would examine the lateral as well as the vertical development of words (that is, he would study the associated words as well as the etymological or historical development of them); he is less interested in the historical approach to semantics than in the extensions from word forms and meanings through phonetic shifts. Starting with the familiar consonant shifts within the Indo-European family, he moves to less familiar patterns which, when examined and grouped, reveal large clusters of words related through sound and meaning to a central concept and form. Most of the basic words of all languages, Reiss believes, derive from the concept of striking or of directed energy.

His discussion of word-clusters is especially interesting. Noting that a whole series of words with related meanings also have related sounds within the various Indo-European languages, he goes on to point out that similar words, evidently related to the same clusters, reflect similar sound shifts and meanings in non-Indo-European languages. He points out that word clusters in Swahili and in Hebrew parallel clusters in English or other Indo-European languages. Sound and meaning of words may show close relationships between languages not of the same linguistic family and not having similar patterns of syntax and accidence. In this connection he discusses the sound preferences which characterize the phonetic patterns of the various languages, preferences which, according to Reiss, are superficial rather than basic in language analysis.

By suggesting new ranges of phonetic studies in language development in their relations to word clusters, Reiss offers interesting possibilities for speculation and study by the linguist and the phonetician.

At times, Reiss is not too convincing. He protests too much and seems to try to make his theory fit all situations. His habit of choosing dictionary definitions for meaning without regard to historical development is disturbing; too frequently the reader feels that the link in meaning is accidental, and not basic. By greater willingness to accept the historical approach as an aid, he might have overcome some sensed objections to his theory. The neatly developed meaning patterns, clustering around a single concept and flourishing like the green bay tree, seem to be a blend of pooh-pooh and ding-dong theories given phonetic drapings.

On the other hand, his discussion of sound patterns, of sound preferences, of meaning relationships is excellent and worth careful study. Especially does he offer much of value to anyone interested in the problems of remedial or corrective communicational skills, whether oral or written. Further, he avoids sweeping assertions and

grand gestures; he does not expect his book to bring peace on earth and perfection everlasting, even though all of its theories be accepted. This is a book that ventures boldly and deserves careful reading by workers in the fields of language study.

RANDALL V. MILLS.

University of Oregon
Department of English

THE BULLETIN OF THE NATIONAL ASSOCIATION OF SECONDARY SCHOOL PRINCIPALS. *Speech and Hearing Problems in the Secondary School* (Vol. 34, No. 173). Washington, D. C., 1950. Pp. 139. $1.00. Prepared under the editorial supervision of the American Speech and Hearing Association with the cooperation of the Speech Association of America by Stanley Ainsworth, Chairman, Editorial Committee.

The *Bulletin* is one of eight published annually by the National Association of Secondary School Principals. It is the third such special bulletin in the field of speech published by this Association, the other two having been: *Speech Education for All American Youth* and *Dramatics in the Secondary Schools*. Its purpose is to '. . . give principals and teachers a clearer understanding of the nature and potentialities of a corrective program in speech and hearing' and to 'provide a substantial foundation for those who are interested in securing assistance for students who have speech and hearing problems.' It is oriented specifically to the secondary school situation.

The *Bulletin* is divided into five main parts; 32 writers contributed 29 articles averaging four pages in length. There is a briefly annotated seven-page bibliography which is the joint effort of five people; and the American Speech and Hearing Association was ably represented by an Editorial Committee of six which, in turn, used the services of eight consultants. In all, 47 people are officially named as having had a hand in the project. There is, it appears, reason to hope that the secondary school principals will be overwhelmed by sheer weight of numbers.

The question arises as to whether or not this is a case of 'too many cooks.' This reviewer is inclined to feel that the *Bulletin* was saved from disjointedness and repetition by a narrow margin and only by virtue of careful editing and a very good over-all organization. It does not seem feasible within the limits of this review to mention each article and author by name or to attempt detailed comments, but the general plan can be given. Part I entitled, *General Orientation to the Area of Speech and Hearing Therapy*, defines the area generally, cites specific types of speech and hearing problems, argues the need for speech and hearing programs and tells, in general, how such a program can be started.

Part II deals with *What the Principal Can Do About Speech and Hearing Problems*. One article in this section discusses the role of the principal as an administrator and supervisor. Seven others discuss in more specific terms what the principal and the teacher can do about articulatory defects, stuttering, voice problems, hearing loss, cleft palate, cerebral palsy and foreign dialect. This section seems to recognize explicitly that the secondary school teacher can and should do something about speech and hearing problems in a more direct and specific way than by merely 'understanding,' and by cooperation with a professional therapist. This is an encouraging note in view of the recent tendency of some leaders in our Association toward professional exclusiveness and an insistence that only highly trained specialists should work with defective speech. It also seems to indicate a more realistic awareness of the nature of the problem.

The functions of the speech and hearing therapist are discussed in Part III. One article lists qualifications and six describe specific activities, namely, testing speech, testing hearing, teaching speech skills, teaching hearing skills, improving adjustment, and developing good working relationships. What may be expected in the way of plans, reports and accomplishments is outlined in three additional articles.

Part IV is called *Organizations Which May be of Help to the Principal* and contains in six articles descriptions of the Amercian Speech and Hearing Association, the Speech Association of America, the National Society for Crippled Children and Adults, state agencies, community agencies, and university clinics. Part V contains the previously mentioned reading list.

At this point the writer cannot help wondering whether or not he, 'having been raised in the faith,' and being currently a member in good standing of the ASHA

ought, by rights, to be reviewing this *Bulletin*. Presumably, the most pertinent question is: How good is this material from the point of view of secondary school principals? Your reviewer confesses that he is unable to answer. It might have been more interesting and enlightening if a critical review had been written by one of those principals to whom the material is addressed.

Nevertheless, the writer feels duty bound to express an opinion, but clearly he speaks as one of the fellows in the bond and not as a high school principal. This collection of material impresses your reviewer as a sober, painstaking, comprehensive, accurate (and slightly dull) general survey of speech and hearing programs in the secondary schools. 'Slightly dull' is to be interpreted as 'unexciting' and 'not calculated to fire the imagination.' On sober, second thought, the above statement is hereby retracted; the writer neither dares nor desires to offend at one stroke the 47 able individuals who worked on this project with, on the whole, very good results. Perhaps there is no good reason why this *Bulletin* should 'fire the imagination,' or perhaps there is; or perhaps it does for high school principals and their teachers, which is what really counts.

Be that as it may, we have here a substantial and authoritative body of information on speech and hearing programs which should be of real value to secondary school educators if they read it, and can understand it. Will they read it? They should, because it deals with a subject that many of us believe to be of real importance in public school education. Speech and hearing therapists might profitably encourage wider reading by arming themselves with a few copies for tactful distribution or loan. Can they understand it? It would be undiplomatic to give a negative answer. To the writer, the material seems sensible and understandable. In all probability, it will likewise so appear to the secondary school educator, but one would feel safer if the list of consultants had included three or four high school principals and teachers.

It should be noted that this material also has value within the profession. In conjunction with a companion piece, *The Role of Speech in the Elementary School*, published in 1946 by the Department of Elementary School Principals, it offers a compendium of the best and most practical ideas of some of our foremost clinical workers—ideas that have been culled from a combined total of many years of successful experience. It should be of more than passing interest to students preparing for positions as public school speech and hearing therapists and to their instructors. It is to be hoped that sufficent copies were printed to allow for class use. It is also to be regretted that the binding is not more durable and the format more attractive, since it gives the impression of being crowded. But this is enough of criticism. It was a difficult job, well and faithfully done; and the committee, consultants, contributors, and others are hereby awarded a well deserved accolade.

CLAUDE E. KANTNER.

Ohio University

NELSON, CHARLES R. *Post-Laryngectomy Speech: You Can Speak Again!* New York: Funk and Wagnalls, 1949, Pp. 95. $1.00.

This is a practical handbook for the laryngectomized patient. The author has undergone this operation and has learned to talk using the 'pharyngeal' method.

Mr. Nelson describes the artificial larynx and the electric larynx as aids to speech, but he decries their use for the person who has lost his vocal cords. Instead, he highly recommends 'pharyngeal speech' which is produced by 'locking the air in the throat by using the tongue and its muscles. This eliminates the necessity of swallowing air deep into the esophagus . . . .'

A second method which he advocates is 'esophageal speech' which has been described frequently in the literature. Both of these methods are clearly explained and illustrated by diagrams of the mechanisms involved. A series of lessons of increasing length and difficulty is included.

Other sections of this little book contain practical suggestions for the patient, such as care of the tracheal tube, the arrangement of clothes for comfort and social approval, the periodic re-examination by the doctor, the method of regaining the sense of smell, etc.

The author intended this book for the patient himself. He directs his remarks to him in second person and conversational style, exhorting the patient to have courage and follow assiduously the various suggestions as outlined. Teachers of the laryngec-

tomized may read this book with profit and use it as a supplementary text. A carefully selected bibliography would have added to the value of this book.

KATHERINE F. THORN.
University of Buffalo

POHL, JOHN F. *Cerebral Palsy*. St. Paul: Bruce Publishing Co., 1950. Pp. 224. $5.00.

This book presents somewhat different theories on cerebral palsy than have appeared in literature heretofore. Since the treatment of the cerebral palsied condition is rather new, there are bound to be many controversial theories advanced concerning the diagnosis and treatment, as well as a great dearth of literature concerning the subject. For that reason alone, it is well to have material written by men of Dr. Pohl's abilities and experience.

It is the opinion of the reviewer that this book is primarily for professional people. Parents and even semi-professionally trained individuals should not be urged to follow it.

The need of documentation was felt in reading some of the statements made in the early sections. The book presents an experience with school-age children. The therapies presented and methods described do not seem to be of the type effective with infants and preschool children.

The section on speech training is well organized and shows knowledge of cerebral palsied children who have been accepted in a school for handicapped children. It is felt that the speech therapist is given some responsibilities in this book which ordinarily are functions performed by other therapists or medical personnel, such as determination of 'cerebral dominance, body sidedness and ocular sidedness.'

The illustrations presented are clear and helpful. The whole treatise will be a useful contribution to the literature concerning cerebral palsy.

JULIETTE M. GRATKE.
Dallas Society for Crippled Children

NITCHIE, ELIZABETH HELM. *New Lessons in Lip Reading*. New York: J. B. Lippincott Co., 1950. Pp. 251. $4.00.

This book is a revision of *Lip Reading Principles and Practice* written by Edward B. Nitchie in 1912. Mrs. Nitchie's revision follows the general plan and principles of her husband's book, but most of the lesson material is new.

The first of three sections in the book is made up of two short articles by Edward Nitchie, 'To the Friends of the Deaf' and 'The Eye as a Substitute for Deaf Ears,' both of which were originally published in *Volta Review*.

The second section is devoted to a brief discussion of general principles of teaching lip reading and suggestions for using the lesson material.

The third section, constituting three-fourths of the book, presents 35 lesson units, 35 short stories, and supplementary material in the form of colloquial sentences. The author's aim was to make all the practice sentences conversational in form and to use words in their different meanings. The idiomatic expressions, cliches, and adages that occur in daily conversation are liberally represented. Lesson materials appear to be well suited to the teaching of partially and totally deaf students of high school or adult levels.

Although there is little new in fundamentals contained in the 61 pages given over to the principles and psychology of teaching lip reading, it must be said that the author has simply and concisely presented the ideas which were included in her husband's original book.

The author's major contribution is the abundance of new and usable lesson materials. They should give any lip reading teacher working with adult groups a wealth of practice material which is carefully organized, sufficiently varied, and realistic in content.

KENNETH SCOTT WOOD.
University of Oregon

SHANNON, CLAUDE E. AND WEAVER, WARREN. *The Mathematical Theory of Communication*. Urbana: University of Illinois Press, 1949. Pp. 117. $2.50.

The initial and major portion of this work is a mathematical analysis by Dr. Shannon of a general theory of communication. The term communication is used in its broadest sense as any procedure by which one mind or mechanism may affect another mind or mechanism. The basic problem is the determination of the multiplicity of mes-

sages that can be transmitted over a channel by a given transmitter.

An information source, for example the brain, selects a message from a collection of possible messages. A statistical process is involved in this selection since the choice of message may be dependent on the prior transmission. During transmission the message may be subject to outside interference of a random or statistical character which we call 'noise.' The receiver in decoding the signal delivers to its destination the original message mixed with 'noise.' A principal result is that if a channel capacity is sufficiently large, a coding process with sufficient redundance is possible which will enable the receiver to decode the original message with an arbitrary small frequency of error despite the 'noise.' With a lower channel capacity, however, no such coding process can possibly exist and there is a well determined residual error which is inevitable.

The second portion of the book is a non-mathematical summary by Dr. Weaver of the mathematical results of Dr. Shannon. In particular it is indicated that a parallel theory would result if the 'noise' occurs between the information source and the transmitter or between the receiver and the destination, as would be the case in some types of imperfect speech or hearing. Also, the original theory takes into account only the abstract message and not the meaning contained within a message. The latter could be embodied in the theory by affixing a 'semantic receiver' into the communication circuit and allowing for the possibility of 'semantic noise' being added to the message in course of transit.

PAUL CIVIN.

University of Oregon
Department of Mathematics

FILM REVIEWS

YOUR VOICE. No. 427. Black and white. Sound. 16 mm. 11 minutes. Britannica Films, Inc., Wilmette, Illinois. Sale price $50.00; Rental $2.50. Can be obtained from Preview and Rental Libraries, 207 S. Green St., Chicago 7, Illinois; 712 Haskell St., Dallas 1, Texas; 30 Huntington Avenue, Boston 16, Mass.; 450 W. 56th St., New York 19, N. Y.; 1640 E. Mountain St., Pasadena 7, Calif.; 3232 S. Roxboro Road, Atlanta 5, Ga. Teacher's and Discussion Leader's Guide available with additional copies at 5c each.

The film treats respiration, phonation, resonance, and articulation as elements of voice production. Animated drawings illustrate the position and action of the larynx, the process of respiration, the resonating cavities in the formation of vowels, and the movements of articulation. In addition, an X-ray motion picture sequence explains the action of the diaphragm and shows the coordination of movements of the ribs and the diaphragm, and special photography shows the vocal folds in action. Finally, a classroom scene puts the material of the film to work, especially for prospective students of voice and diction who want to be 'improved.' The photography is adequate. The film arouses the interest of students who have little or no knowledge of the elements of voice production. High school students and classroom teachers find it stimulating and possibly helpful to understanding voice production. It also serves as a basis for discussion in a review of the vocal mechanism in an elementary class. The first one-sixth of the film is attention-gaining material that shows the scope of audible sounds that seem to make up communication: human and non-human, English and non-English, speech and song. This content might introduce almost any subsequent content about speech.

In the main exposition of the film two errors are glaring and the importance of one sequence of pictures is open to question. (1) The diaphragm is called 'flat.' (2) the vowel sounds are treated as *a, e, i, o, u.* These crude mistakes only emphasize the precautions that must be taken by makers of motion pictures if the results of this vivid art are to help the classroom teacher. In addition, the classroom scenes with students seem to imply that corrective exercises are underway. It is open to question whether the exercises are corrective and if so for what. In short, the film stands up better as an abstraction than as a bill of particulars.

SPEECH SCIENCE STAFF.
(John W. Black, Ed.)
The Ohio State University

WE SPEAK AGAIN, The rehabilitation of laryngectomized patients. Color. 22 minutes. Sturgis-Grant Productions, 314 E. 46th Street, New York. Sale price

$80.00; Rental $7.50. Free through American Cancer Society.

This film was produced for the patient who is about to have his larynx removed and for his surgeon. It attempts to encourage the former, assuring him, 'You will talk again,' and to impress upon the latter the importance of considering speech rehabilitation as part of the operation.

The introductory part of the film shows that speech therapy may aid the patient to remain a part of his social set; also it presents schematic drawings to explain basic principles of esophageal speech, the kind of speech that he will have to use.

The major part of the film is a narrative about a young business executive who undergoes laryngectomy. Before the operation, the young man meets his speech teacher, a user of esophageal speech, and gets basic notions about how it works. After the operation, he receives individual instruction from her in the hospital. The teacher seems to emphasize two objectives: (1) The right sound (with special attention to the vowels); and, (2) as much speech as possible on one breath. Progression is from one sound to nonsense syllables to single words to several words. Later the patient receives similar instructions with more than a dozen similar cases. The group therapy is well portrayed and the number of similarly afflicted patients shown in the scenes might encourage a prospective user of esophageal speech.

The executive returns to his office and uses the telephone.

Summary: Anatomy: none. Explanation of the esophageal vibratory system. none. The sound of esophageal speech: good. Purpose: motivation and indoctrination of the patient and surgeon. Photography: good. Misleading information: (1) Although the film would substitute the stomach for the lungs, probably in practice little, if any, of the air that is used in speech reaches the stomach; (2) this patient produces a sound with each attempt.

SPEECH SCIENCE STAFF.
(Ruth Beckey Irwin, Ed.)
The Ohio State University

THE EARS AND HEARING. No. 425. Black and white. Sound. 16 mm. 11 minutes. Britannica Films, Inc. Wilmette, Illinois. Sale price $50.00; Rental $2.50. Can be obtained from Preview and Rental Libraries, 207 S. Green St., Chicago 7, Illinois; 712 Haskell St., Dallas 1, Texas; 30 Huntington Avenue, Boston 16, Mass.; 450 W. 56th St., New York 19, N. Y.; 1640 E. Mountain St., Pasadena 7, Calif.; 3232 S. Roxboro Road, Atlanta 5, Ga. Teacher's and Discussion Leader's Guide available with additional copies at 5c each.

This film portrays the hearing mechanism and gives an understanding of some of the conditions that may lead to reduced hearing and of some of the measures that may be taken to overcome the resulting impairments. The explanation of how the ear transfers sound waves into nerve impulses is good. Longitudinal cross-section of a specimen ear allows observation of the parts of the ear; the movement of the chain of three middle ear bones transmitting vibrations of the eardrum to the cochlea is further illustrated through adequate drawings. The film makes clear the parts of the labyrinth, with particular emphasis on the cochlea. As an example of how to compensate for hearing loss the film shows and defines a hearing aid, although this topic is not adequately treated. Forty prospective teachers observing the film stated that for the first time, after seeing it, they had a clear conception of the functioning of the human ear.

SPEECH SCIENCE STAFF.
(Virginia Sanderson, Ed.)
The Ohio State University

Abstracts

BRYNGELSON, B. Need for speech correction—where are we now? *Sth. Speech J.*, 15, 1950, 277-279.

The new interest in speech correction has brought a need for training programs in speech pathology in colleges and universities. Those responsible for these programs must obtain budget appropriations, introduce adequate curricula, and prepare students to fill the vacancies now appearing throughout the country.

To encourage interest in the field of speech correction, we must announce speech correction as a profession, obtain the assistance of superintendents of schools in distributing information about the vocational opportunities in the field, participate in 'vocation day' programs in high schools, talk to community groups, and keep the training at a high level of adequacy. All of these procedures will take time. (*C.G.W.*)

ARNOLD, G. E. The importance of voice and speech pathology. *Clin. Med.*, 58 (1), 1951, 13-16.

In three pages the author presents a brief resume of the extent of voice and speech pathology. Organic dysfunctions are stressed in a medical manner and language. The article would appear to be directed chiefly to members of the medical profession, appraising the field from that particular frame of reference. (*S.J.O.*)

SENN, M. J. E. After the Midcentury White House Conference—what? *Child*, 15, 1950, 81-86.

This article is based on a paper originally presented at the Governor's Conference on Children and Youth. The author believes it is imperative that the White House Conference serve as a rally place for appraisal of what is known, what is being done, and what should be done in child care, child rearing, and particularly on the development of the healthy personality.

The author is mainly concerned with the development of healthy personalities in children. The topics discussed include the development of personality, reassurance of expectant mothers, love and the infant's well-being, the child's need for belonging, emotional disturbances of children, the need for teaching human relations, and the training of children in the art of living. (*K.S.W.*)

POWELL, V. F. AND VOORHEES, O. N. Speech correction in Kanawha County schools. *Elem. Sch. J.*, 56, 1951, 279-282.

The authors describe methods which have been used in Kanawha County in conducting a speech correction program during the last 18 years.

Letters are sent to parents inviting them to come and discuss their children's speech problems, and progress reports are sent regularly to the parents in which questions are asked of the parents to help the clinician. Much integration is observed with the classroom routine and joint materials are used. A 'Guide to Speech Instruction' is distributed to the teachers at the opening of the school year to acquaint them with principles the speech correction teachers feel all teachers should observe. These are followed by other instructional materials and lesson plans used later in the program. Complete forms and reports are kept on all speech cases and the staff of correction teachers

Abstracts is edited by Eugene T. McDonald, Pennsylvania State College, assisted by the following committee: Jack L. Bangs, University of Washington; Asa J. Berlin, Pennsylvania State College; Harlan Bloomer, University of Michigan; Leo G. Doerfler, University of Pittsburgh; Charles R. Elliott, Northwestern University; Lester L. Hale, University of Florida; Sylvia J. Onesti, Children's Medical Center, Boston, Mass.; D. C. Spriestersbach, State University of Iowa; Jesse J. Villarreal, University of Texas; Charlotte G. Wells, University of Missouri; Harry S. Wise, U. S. Marine Hospital, Boston, Mass.; and Kenneth Scott Wood, University of Oregon. The committee systematically reviews 203 journals for articles of interest to memebers of ASHA. Students and other members are encouraged to submit abstracts. Directions for preparing abstracts may be obtained from the abstracts editor.

holds regular departmental meetings to discuss common problems. Members of the department also hold group meetings with other school staffs.

In addition, other special services are given such as 'clinic days,' and courses for teachers. Many speech activities such as choral reading, creative dramatics, rhythm bands, and programs are used to support the correction procedures. (*L.L.H.*)

GENS, G. Improving speech facilities in south Jersey schools. *Train. Sch. Bull.*, 47, 1950, 188-197.

A speech handicap can prevent a child from making the best use of his abilities. On the basis of previous survey percentages, it is estimated that there are about 60,000 to 70,000 children with defective speech and about 30,000 children with hearing problems in New Jersey. In a 1948 survey, New Jersey ranked fortieth among the states in providing for the speech handicapped child. The education of the speech handicapped child should be done mainly in the public schools. Equipment and special teachers are expensive, but less so than the cost of grade repeating and institutionalization. Also, how does one evaluate in terms of human cost? It is recommended that yearly audiometric surveys be mandatory for each school child; that classroom teachers have basic courses in speech science orientation; that a well integrated course of study be organized for the prospective speech correctionist; that speech clinics be created for diagnosis and intensive therapy. (*A.J.B.*)

PRONOVOST, W. Teaching effective speaking in the elementary school. *Educ. Dig.*, 16 (4), 1950, 50-53.

The article's purpose is to present examples of the integration of speech training in the elementary curriculum. Such a program should improve ability to speak with poise and self-confidence, ability to use voice and articulation adequately, ability to organize thoughts and ideas effectively, ability to participate effectively in group discussion, and ability to read prose and poetry aloud communicatively.

Practice towards these goals must be guided so as to give proper motivation, standards of achievement, development of specific skills, and numerous opportunities for practice.

Examples of procedures such as the following are given: relate relaxation of the vocal mechanism to relaxation of the whole body, use descriptive language of fairy tales such as 'huffing and puffing' for development of breath control, increase of volume by game-drills on baseball umpire calls and cheerleading, relating tone production in singing to speech. Emphasis is placed upon auditory discrimination and drills in articulation being accomplished simultaneously with introduction of reading instruction.

In all aspects of the elementary school speech program high degree of integration of materials and skills would be made with other subjects and other classroom performance. (*L.L.H.*)

PRONOVOST, W. A co-ordinated program for teaching effective speaking. *Elem. Sch. J.*, 51, 1950, 31-34.

Examples are presented of the integration of speech training in the curriculum. The author points out the need for a speech consultant in helping the classroom teacher effectively teach speech skills with a minimum of additional time in an already overcrowded curriculum. An integrated speech program makes possible the development of speech skills through the use of materials in other subjects, at the same time that it makes use of good speech techniques as devices for improved teaching of other subjects. (*K.S.W.*)

PEINS, M. Speech techniques for the classroom. *Elem. Engl.*, 27, 1950, 446-449.

Techniques centered around the play approach of learning correct speech production and delivery are described in this brief discussion. Such speech activities as choral speaking, creative dramatics, pantomine, and special games are discussed. (*C.G.W.*)

WHITING, D. M. Some initial problems encountered in the organization and integration of a speech therapy department in a Transvaal provincial hospital. *J. Logopaedics*, 1 (2), 1950, 12-16.

Some of the problems involved in developing a clinical speech program are discussed. (*H.S.W.*)

BEASLEY, J. Group therapy in the field of speech correction. *J. except. Child.*, 17, 1950, 102-107.

The author describes the functions of a program of group therapy in speech correction, defines assumptions governing its use and concludes with a summary of the purposes served by such a program. An intensive type of therapy which permits a com-

bination of group and individual work for several hours a day over several weeks or months, the author contends, is being used with effective results. (*K.S.W.*)

MUSSAFIA, M. Speech rehabilitation in cerebral spastics. *Occup. Ther. Rehabilit.*, 29, 1950, 11-16.

The common denominator in the rehabilitation of the cerebral palsied is the need to overcome the spasms. Two kinds of group work are effective in aiding those with cerebral palsy—the group in which the child works with others of his kind and the rehabilitation group composed of the physician, psychologist, kinesitherapist, educator, and speech therapist.

With relaxation as the first step, chewing to strengthen the muscles and reflexes of mastication and swallowing, exercise of the sucking muscles, and mirror work in correcting articulatory problems will be helpful. Rhythmic exercises will aid in encouraging the use of final syllables.

The need in speech rehabilitation for the cerebral palsied is to improve the production of language so that the handicapped individual is able to meet the ordinary needs of daily living. (*C.G.W.*)

McKHANN, C., BELNAP, W. AND BECK, C. Cervical arteriovenous anastomosis in treatment of mental retardation, convulsive disorders and cerebral spasticity. *Ann. Surg.*, 132, 1950, 136-159.

This is a report on 125 patients who have had 'an operation designed to increase the arterial blood supply to the cortex of the cerebrum through production of an arteriovenous anastomosis between one of the carotid arteries and the internal jugular vein, with ligation of the jugular vein proximal to the anastomosis . . .' In theory and in actual practice such an anastamosis should increase the oxygen tension in the border areas of traumatic scars in the cerebral cortex significantly and in consequence increase the efficacy with which the emeshed cortical cells function. This increased efficiency should, therefore, increase the I.Q., decrease spasm, and cause convulsions to alter or to disappear. These theoretical findings were verified in about 50% of the patients treated, the greatest benefit being derived by children with mental retardation due to birth injury and with convulsive disorders due to organic lesions. Adults showed poorer improvement and a higher incidence of failures. Speech was one of the functions showing excellent improvement in these cases. (*H.S.W.*)

SNOW, W. AND FIELDS, B. Music as an adjunct in the training of children with cerebral palsy. *Occup. Ther. Rehabilit.*, 29, 1950, 147-156.

Music has been used in the Department for Motor Disabilities of the Neurological Institute of Columbia University to help meet the needs of the cerebral palsied on a physical level by stimulating musical activity, strengthening muscles, improving motor co-ordination, and encouraging relaxation. On the emotional level, music is a source of interest and outlet, a 'tool for living.'

Cerebral palsied children at the Neurological Institute have taken part in rhythm band activities, have learned to play the piano, have acquired skill in reading music, and have written music of their own. Functional music has been successfully used as a part of the treatment of the cerebral palsy patient. (*C.G.W.*)

GORE, B. Secondary education for cerebral palsied children. *J. except. Child.*, 17, 1950, 15-19, 24.

California's program for cerebral palsied children is described in this article. The state has established two diagnosis and treatment centers and two residential schools, and has employed two consultants. Some school systems have established special classes for the cerebral palsied. Problems of space, acceptance of the program, transportation, expense, finding trained teachers, and educating parents are stressed. The program has served 1500 children in the five years it has been in operation. (*C.G.W.*)

AIRD, R. B. AND COHEN, P. Electroencephalography in cerebral palsy. *J. Pediat.*, 37, 1950, 448-454.

Clinical studies of 187 cerebral palsy children from age 1 to 27 included determination of etiology, physical and neurological examinations and psychometric evaluation. Skull X-rays were done in every case and laboratory studies were made. Twelve-electrode placement was used in the EEG studies and, in addition to usual methods of analysis, a systematic comparison of differences in hemispheric synchrony, form, frequency and potential of many homologous tracings were obtained simulataneously.

Of 128 spastics, EEG classification showed 85% abnormal, 2% borderline; 62% of the abnormal EEG's showed focal changes. Of 53 athetoids, 8% were borderline and 60% abnormal, of which 32% showed focal changes. EEG changes, correlated with 'known' etiology, showed abnormal findings in 98% of the spastics with a history of injury or infection, 83% of spastics of anoxemic, congenital and premature origin, and none in the Rh group. The corresponding percentages for athetoids were 67% and 72%, and here abnormal findings were reported in 63% of those with an etiology of Rh incompatibility.

Depending on severity of involvement, the spastic group showed from 12 to 52% more abnormal EEG's than the athetoid group. Handedness of 96% was associated with the hemisphere of least involvement, regardless of inherent dominance. EEG localization correlated with clinical findings in 98% of the instances. In the majority of cases, value of electroencephalography is of a confirmatory nature and it serves to fill out the picture of the condition under study from a physiologic viewpoint. (*S.J.O.*)

Ivy, R. H. Recent trends in cleft palate treatment. *Plastic Reconstr. Surg.*, 5, 1950, 537-538.

The technique of surgical closure of the cleft lip and palate is now fairly well standardized and surgical specialists can, in many cases, produce functional palatal closures. There are many cases, however, who do not get a good result from surgical procedures. In these cases proper pre-treatment evaluation might have avoided operative catastrophes. Pre-treatment evaluation should be made by a team including a surgical specialist, general dentist, orthodontist, prosthodontist, otolaryngologist, psychologist and speech therapist. Another trend resulting from recent growth studies is the search for an optimum age for operation. (*E.T.M.*)

Cooper, H. K. Cleft lip and palate. *Dent. Radiogr.*, 23, 1950, 41-49.

Justification for considering the cleft palate child a 'crippled' child is presented and a four-fold classification of clefts described. Three studies of incidence are cited. The close cooperation of the dentist, physician, surgeon, psychologist, speech therapist, radiodontist and dental technician is urged. The role of radiography in diagnosis is discussed and illustrated by radiographs. Techniques for checking the speech appliance *in situ* are described and procedures for producing better definition of soft tissue outlined. With reference to recent growth studies, the opinion is given that surgery is contraindicated in many cases and the use of prostheses in these cases is recommended. An insert presents reproductions in full color of Kodachrome transparencies that depict 'before and after' clinical photographs of cleft lips and palates. (*E.T.M.*)

Coursin, D. B. Treatment of the patient with cleft palate. *Amer. J. Dis. Child.*, 80, 1950, 442-453.

The type of information which the pediatrician needs for counseling parents of cleft palate and cleft lip babies is presented. Etiologic factors are considered and a four-fold classification outlined. It is recommended that closure of the lip should not be done until the third or fourth month. The optimal time for surgical or prosthetic closure of the palate is four to six years of age. Good speech training and use of speech bulb appliances have been found to give uniformly the best results. Psychologic adjustment of the family and patient is most essential in the over-all rehabilitation program. The problems of the cleft palate person can best be handled by a clinic team comprised of physicians, surgeons, dentists, orthodontists, speech therapists, a psychologist and various laboratory technicians, and warrant the financial support of government agencies. (*S.J.O.*)

Graber, T. M. Changing philosophies in cleft palate management. *J. Pediat.*, 37, 1950, 400-415.

The etiology of cleft palate and the techniques used in managing the patient's problems are reviewed. The author reports the results of his roentgenographic study which suggest that the surgically repaired palate grows more slowly than the surrounding soft tissue resulting in increasing malfunction and ultimate structural inadequacy. Patients who have not had surgical manipulation of their palatal clefts show an essentially normal pattern of maxillary growth. Since the goal of palatal reconstruction is functional integrity it seems advisable to delay surgical closure of the palate at least until the end of the fourth year of life. If functional integrity cannot be achieved by surgical procedures, prostheses must be utilized. The following specialties must co-

operate in rehabilitating the cleft palate patient: speech, pediatrics, psychiatry, orthodontia, audiology and otolaryngology. (*S.J.O.*)

BAKER, H. K. AND MCDONALD, E. T. Rehabilitation of the laryngectomized. *Crippled Child*, 30 (3), 1950, 10-11, 28-29.

The surgical removal of the larynx produces a grave adjustive crisis for the personality. Since each person's reaction to stress is determined by his personality, there is no one way to prepare all patients for their surgical and hospital experience. A carefully conducted discussion before the operation concerning the manner in which speech is produced and the effect of the loss of speech will help to raise the patient's self-confidence and reduce his anxiety. Whenever possible, the patient should meet and hear a successful esophageal speaker or at least hear a good recording of such speech.

The authors present several detailed aspects of teaching esophageal speech (*K.S.W.*)

OSBORNE, A. My experience of laryngectomies and esophageal speech. *J. Logopaedics*, 1 (2), 1950, 20-23.

Some problems of teaching esophageal speech are described. (*H.S.W.*)

MARTIN, H. Esophageal speech. *Ann. Otol. etc., St Louis*, 59, 1950, 687-689.

The best method for the production of artificial speech after total laryngectomy is by the method known as esophageal speech. After such an operation the reservoir of air for voice production is in the esophagus rather than in the tracheobronchial tree. When this column of air is eructed upward it produces a vibration of soft tissues surrounding a relatively narrow aperture at about the level of the crico-pharyngeus or, in some cases, at a level higher in the hypopharynx, and the vibration of these soft tissues produces sound which is identical with the belch in the normal person.

The author feels that undue stress has been laid on identification of the neuromuscular structures involved and on detailed descriptions of the commonplace act of belching. It is sufficient to realize that the vibrating tissues may be at any level from the crico-pharyngeus up to the base of the tongue, i.e. wherever the healing of the tissues in the operative field has produced the narrowest aperture in the soft tissues which can be made to vibrate. The mechanism is that of belching, and the author feels that this fact should be made plain, rather than enshrouding the character of esophageal speech in an unsuitable encumbrance of mystery. (*S.J.O.*)

BANGS, J. L. Speech retardation. *Sth. Speech J.*, 15, 1950, 207-211.

Some cases of delayed speech are due to brain injury, the signs of which are minimal but discoverable. To diagnose these children as congenitally aphasic does not mean that the treatment for them can be the same as for those with acquired aphasia. The person with acquired aphasia has a foundation for therapy in certain retained language capacities, but language education for the child with an idiopathic language retardation cannot make use of previously learned language assets. (*C.G.W.*)

JACKSON, L. 'Non-speaking' children. *Brit. J. med. Psychol.*, 23, 1950, 87-100.

This is a discussion of nine children referred for an inhibition of speech so severe that they were thought to be defective or psychotic. Indifference to persons and a strong urge to activity were commonly seen in these cases. A piling up of disruptive forces at a critical stage in the child's life seems to develop regressive patterns. Cooperation of the parents was the most important factor in the child's recovery. (*C.R.E.*)

KARLIN, I. W. Congenital verbal-auditory agnosia. *Pediatrics*, 7 (1), 1951, 60-68.

After a brief discussion of congenital word deafness as opposed to mental retardation, hearing disabilities and audimutitas as etiological factors in delayed speech, the author presents a case history of a six-year-old boy with the chief complaints of limited and indistinct speech and hearing defect. Audiometric findings indicated congenital deafness, but the child was found to have fairly good hearing when tested by the psychogalvanic skin resistance method, the findings of which tended to confirm instead a diagnosis of congenital word deafness.

There is a brief discussion of euphasia and the author presents the views of Head, Nielson, Goldstein and others in order to justify his use of the term 'verbal-auditory agnosia' when referring to children with word deafness. He concludes with a summary of the desirable philosophy of treatment. (*S.J.O.*)

LOEWENBERG, R. Speech impulse and language frustration. *Etc. Rev. gen. Semant.*, 8, 1951, 110-116.

The antagonistic forces are in steady conflict in man—one, a drive to reach out to others through sounds; the other, the awareness of how inadequate our tools are and how little is transmitted to our fellow man. The speech impulse and the language frustration are vividly felt at the various levels of emotions. Language distress appears as one of the fundamental experiences of human frustration. This seems to be true in aphasia, in the making of 'language bridges,' in the building of synthetic languages, in the learning of a new language. Whatever the sources and causes of language distress may be, the drive to speak always asserts itself against even the strongest obstacles. (*C.G.W.*)

DOLL, E. A. Mental evaluation of children with expressive handicaps. *Amer. J. Orthopsychiat.*, 21, 1951, 148-154.

Standard psychometric techniques are based on certain assumptions. Examination of children with expressive handicaps should include some validation of the assumptions which underlie the examining procedures used. The clinician should reciprocally evaluate embarrassments preventing presumed normal achievement and causes operative qualitatively in obtained inadequate responses. The clinician should not overlook himself as an important factor in these considerations. (*C.R.E.*)

STEIN, L. The emotional background of stammering. *Brit. J. med. Psychol.*, 22, 1949, 189-193.

A number of symptoms in stammering appear in the reverse order in which they develop in infantile speech. Environmental conditions, especially parental attitudes, may play an etiological role. The explanation of such symptoms as regression is given from a psychoanalytically oriented frame of reference. (*C.R.E.*)

ROSENDORFF, M. L. Rhythmic distraction techniques in a dysphemic therapy: a general discussion. *J. Logopaedics*, 1 (1), 1948, 33-36.

The author describes the part that rhythm plays in stutter-therapy and suggests a plan of action. (*H.S.W.*)

STERN, E. A preliminary study of bilingualism and stuttering in four Johannesburg schools. *J. Logopaedics*, 1 (1), 1948, 15-25.

A survey based on a combined questionnaire personal-interview method studied the occurrence of stuttering among children who were either unilingual or bilingual for the years prior to age six. The conclusions derived from an analysis of 1,861 children were: (a) 1.77% of the children studied stuttered, (b) of the unilingual children 1.66% stuttered, (c) of the bilingual children 2.16% stuttered, and (d) of the children who stuttered a much higher percentage of the bilingual were severely afflicted than were the unilingual, on a ratio of 3 to 1. (*H.S.W.*)

v. RENEN, S. B. Tongue troubles. *J. Logopaedics*, 1 (2), 1950, 17-19.

A stutterer describes his experiences. (*H.S.W.*)

STOHR, T. Case study of dyslexia. *J. Logopaedics*, 1 (1), 1948, 28-33.

This article, based on a Master's thesis done at the Witwatersrand University, South Africa, outlines the problem of visual alexia and describes the method of therapy used with a case. (*H.S.W.*)

CURRY, E. T. Is your boy's voice 'changing'? *J. Logopaedics*, 1 (2), 1950, 7-11.

This article presents a non-technical summary of what is known about the adolescent break in voice and what it means. (*H.S.W.*)

STERN, E. Recent research in dyslalias. *J. Logopaedics*, 1 (2), 1950, 26-31.

In a study of 350 children with either sigmatism, rhotacism, or thetacism, an attempt was made to determine the period of time required to correct the single defect under standard conditions of therapy. Using two half-hour lessons a week, it was found that it took 7.1 months to cure thetacisms, 10.1 months to cure rhotacisms, and 11.0 months for sigmatisms. (*H.S.W.*)

STASNEY, K. Parent counseling in speech correction. *West. Speech*, 15 (1), 1951, 17-22.

Counseling is desirable with the parents of all children receiving speech correction, but particularly with the parents of children who have speech disorders with a predominantly emotional origin and of children with organic speech defects. The speech therapist should help the parents to

mature emotionally and should educate them as to the nature and handling of the disorder. The correctionist may also, through counseling with parents, encourage them to obtain professional consultation and treatment for their speech-handicapped children. (*C.G.W.*)

SPRIESTERSBACH, D. C. AND BUCK, M. W. Speech—an index of maturity. *Childh. Educ.*, 27, 1951, 260-263.

The evaluation of speech behavior may be one of the means for determining an individual's level of growth and, in some respects, his degree of emotional maturity. Speech is learned behavior and the current speech behavior of the child must be studied in the light of his past experiences and present environment.

The child of three or four may have defective articulation by adult standards and may show disturbances of rhythm. Measures of fluency should be used with great caution as indices of maturity. Since language is often an index of maturity, the immature person may not use his language in problem-solving.

The voice, too, especially where there is lack of a normal amount of pitch change at adolescence, may suggest emotional immaturity. Vocal characteristics in general have some relationship to personality characteristics, but research indicates that the relationship is far from being reliable and valid. (*C.G.W.*)

ACKERMAN, N. AND SOBEL, R. Family diagnosis: an approach to the pre-school child. *Amer. J. Orthopsychiat.*, 20, 1950, 744-753.

A viewpoint is presented for studying the child as an expression of the sociopsychological configuration of the family unit. Importance of the family unit as almost the entire environment of the pre-school child, and the need for studying the family along a time dimension even as far back as the courting of the parents are stressed. Use of this orientation with a case and a discussant's highlighting of the behavior theory involved illustrate the advantages of this approach. (*C.R.E.*)

BAKIVIN, H. Childhood schizophrenia. *J. Pediat.*, 37, 1950, 416-426.

This article presents a detailed discussion of etiology, symptomatology, psychological testing, differential diagnosis, prognosis and treatment. Schizophrenia is being recognized with increasing frequency in children and the diagnosis should be considered in every severely disturbed child. Speech disturbances have been noted as prominent symptoms in the three- to five-year age group. (*S.J.O.*)

DOLL, E. A. Understanding the handicapped child. *Crippled Child*, 28 (2), 1950, 10-12.

A major problem in the education of the handicapped is the problem of understanding. The emotional needs of the special teacher, whether speech teacher, psychiatric social worker or special education teacher, are far greater than the technical needs in the field of specific training. Both are to be desired, but a great deal can be accomplished without technical training if the person who serves handicapped children has the 'heart training, the educated heart as well as the educated mind.' (*K.S.W.*)

GREENBERG, H. A. Problem parents of handicapped children. *J. except. Child.*, 17, 1950, 1-7, 23-24.

In addition to the pressure of cultural and social changes which influence the family, there are specific parental neurotic and character disorders which play their role in causing family disturbance. Some of these specific problems are a result of narcissistic tendencies, as in the case of the self-centered parent who has children only to satisfy her self-interest.

Other individual parental problems cited by the author are: rejection and overprotection, identification of children with the parent's own siblings, parental identification of children with themselves, feelings of inadequacy, infantile attitudes, masochism, compulsiveness, and obsessive anxiety.

Eight factors are discussed in relation to the effect of a handicapped child and a normal mother. These include disappointment, shame, loss of pride, conflict over greater amount of time and care required by the handicapped child in relation to siblings, the intellectual challenge to learn about the nature of the handicap, the drain on the mother's emotional stability, frustration, and financial sacrifices.

The author suggests that prevention of these problems will depend upon the ability of parents to accept their feelings of resentment, upon their assumption of responsibility in locating sources from which they can learn about the handicap, upon their

discovering the child's needs and seeking ways to meet them, and upon their getting to know the parents of children similarly handicapped. (*K.S.W.*)

HARTWELL, S., HUTT, M., ANDREW, G. AND WALTON, R. The Michigan picture test: diagnostic and therapeutic possibilities of a new projective test in child guidance. *Amer. J. Orthopsychiat.*, 21, 1951, 124-137.

Report on a new projective test for children covering ages 8-14. From 1,000 preliminary cards 20 were chosen to comprise parallel series of 12 cards each. Data on four pictures common to both series, from a normative population of 303 children, are presented and their diagnostic value discussed. The entire project is underwritten by the Michigan Department of Mental Health. (*C.R.E.*)

BELLAK, L. AND BELLAK, S. An introductory note on the children's apperception test. *Rorschach Res. Exch.*, 14, 1950, 173-180.

The authors of a new projective personality test for children ages three to ten describe the test. The 10 cards of the test are illustrated and an analysis sheet is presented. Typical themes given as responses in a sample population of 100 children are reported. (*C.R.E.*)

REICHARD, S. AND TILLMAN, C. Patterns of parent-child relationships in schizophrenia. *Psychiatry*, 13, 1950, 247-257.

This study reviewed the pattern of parent-child relationships in 79 cases of schizophrenia. 'In 60 cases, or 76 percent, the mother was the dominant parent. Ten cases, or 13 percent, had overtly rejecting mothers, and 50 cases, or 63 percent, had covertly rejecting, but apparently overprotective mothers. Only 12 cases, or 15 percent, had domineering, sadistic and rejecting fathers. In seven cases, or nine percent, the pattern was not clear. Rejection or overprotection, although found also in the parent-child relationships of neurotics, is frequently more severe in the case of schizophrenics.' (*D.C.S.*)

HONIGMANN, J. J. Culture patterns and human stress. *Psychiatry*, 13, 1950, 25-34.

The author points out that in the last few decades anthropologists have come to realize 'that the distinctive life-ways of different social groups result in the patterning of a distinctive inner life for the majority of members of each such group.' Two points are developed in this paper: namely, that cultures induce anxieties and conflicts in their carriers and also include mechanisms by which members of a social group may obtain relief from such tensions. These mechanisms are sometimes injurious to the integrity of the group and the adjustment of its members. The pressures which our society places upon spontaneity and aggressiveness are examples of stresses which are potentially anxiety and conflict producing. (*D.C.S.*)

FRANCEY, R. A study of the 'epileptic' personality. *Canad. J. Psychol.*, 4, 1950, 81-87.

The purpose of this study was to investigate the clinical impression that there is a distinct 'epileptic' personality pattern. The study is composed of two parts: (1) the construction of an Epileptoid Scale for the Minnesota Multiphasic Personality Inventory and (2) the validation of the Epileptoid Scale.

In Part 1 three groups of subjects, matched for age, sex, I.Q. and years of service in the armed forces, were used. The three groups consisted of normal subjects, paraplegics and idiopathic epileptics. The MMPI was given to the three groups and 31 items from the inventory were selected which showed some indication of differentiating the epileptics from the other two groups. In Part 2 the differentiating items were administered to another group of matched idiopathic epileptics in a further attempt to validate the items.

The author found no basis for assuming that an 'epileptic' personality exists as a distinct type. Rather, she concludes that the 'epileptic' personality 'appears to be the consequence of the reaction of the individual to the disease, both in terms of his own interpretation of environment reaction to it, and his sensitivity to environmental reaction to the nature of the disease itself.' (*D.C.S.*)

BRIELAND, D. M. A comparative study of the speech of blind and sighted children. *Speech Monogr.*, 17, 1950, 99-103.

Eighty-four congenitally blind children, ranging in age from 12 to 18, were matched with a control group of sighted children on the basis of age, sex, socio-economic status, and rural or urban residence. The subjects

were given a brief story to read and study. Ten days later each subject was asked to tell the story in his own way. The story was recorded and a portion of it was also filmed. All subjects wore glasses during the filming to eliminate cues to blindness because of the eye conditions of the blinded subjects. Ten judges listened to the recordings and rated the factors of general effectiveness, vocal variety, pitch modulation, use of loudness and memory on a five-point scale; the presence of defective sounds was also noted. During the viewing of the movie samples the judges rated general bodily action and the degree of lip movement.

Some of the findings were: (1) No significant differences were found between the two groups in general vocal effectiveness or in vocal variety. (2) The blind group was superior in pitch modulation. (3) Ratings of bodily action favored the sighted group. (4) Degree of lip movement ratings favored the sighted group. (5) Rate of speaking of the blind was significantly slower than that of the control group. (6) The judges could not differentiate the blind and sighted groups with success greater than chance on the basis of the cues presented in the study. The author concluded that his findings 'fail to show the inferiority in the use of voice which the literature on speech of the blind would lead one to expect.' (*D.C.S.*)

COTZIN, M. AND DALLENBACH, K. 'Facial vision': the role of pitch and loudness in the perception of obstacles by the blind. *Amer. J. Psychol.*, 63, 1950, 485-515.

An investigation of aural perception, previously established as the necessary and sufficient factor in perception of obstacles by the blind, is here reported. Two blind and two blindfolded seeing subjects were used variously in four experiments. It was concluded that changes in pitch were both a necessary and sufficient condition and that changes in loudness were neither a necessary nor sufficient condition for perception of obstacles by the blind. Continuous sounds are as adequate as intermittent sounds. At normal walking speeds, frequencies about 10,000 cps and above are useful, those approximately 8,000 and below useless. A high tone of a single frequency can be sufficient as a stimulus. The pitch changes perceived were the results of the Doppler effect. (*C.R.E.*)

ARTLEY, A. S. Research concerning interrelationships among the language arts. *Elem. Engl.*, 27, 1950, 527-537.

Relationships have been investigated between reading and the other language arts, between spelling and the other areas, between listening and hearing comprehension and language areas, and between written English and these areas. Certain questions about these various relationships, however, remain to be answered.

The author indicates specific research topics in language arts relationships and includes a bibliography of 70 items. (*C.G.W.*)

NEUMAYER, E. J. Teaching certain understandings about language. *Educ. Dig.*, 16 (5), 1951, 37-39.

The author believes teachers must offset the emphasis being placed upon workbooks, rules, and exercises in grammar, with greater appreciation for the symbolic nature of words. He poses four major concepts which need to be implanted in a student's mind if he is to properly understand language.

1. The word is not the thing. Words are merely symbols. A word by itself 'means' nothing. Words do not have meanings; they get meanings from their contexts. Words have more than one meaning.

2. Words carry more than literal meanings.

3. One use of language is descriptive, or the reporting of fact; another is the expression of opinion.

4. We operate with words on various levels of abstraction. Abstractions, in emphasizing similarities and neglecting differences, lead to behavior based on one experience as if that one were identical to all that can be included under the same term.

Many illustrations of the above points are included, and the semantic concepts are given simple applications. All devices described are to be used within the student's own language experience in order for full recognition and understanding to be achieved. (*L.L.H.*)

SHEROUER, M. Bring language teaching to life. *J. Educ.*, 134, 1951, 8-11.

Present processes of teaching language are not geared to today's needs, but adhere too greatly to the 'translation' and 'reading' methods.

There are two great obstacles to any new approach to the teaching of language: ac-

cumulated inertia and fear. The author's own experience of 25 years reveals five salient changes which should take place.

1. Audio learning must receive new and intensified emphasis.

2. Passive reception of learning units, through systematic exposure to the sound and content of the language must be provided for.

3. Motivated learning on the principle of 'association' ought to be integrated with audio-visual stimuli.

4. Functional relationships between language related to the connotation of event and object must be brought together in the learning process.

5. Earlier starts should be made at the grade school age.

Reference is made to processes of audio-learning, passive reception, use of neuro-linguistic mechanism, functional relationships and the earlier start towards foreign acquisition. The author believes that newer type books, recordings, audio-visual aids are now available for improved methods of teaching if we but have the initiative to revise our concepts and objectives. (*L.L.H.*)

(This article is reviewed because of its significance in clinical work in teaching English as a foreign language.)

GRAY, W. S. Implications of research for the improvement of reading. *Education*, 70, 1950, 539-547.

The author discusses seven contributions of research in reading that have wide implications for the improvement of teaching. They are that the reading act has broad dimensions, that it embraces a wide variety of significantly differing complex activities, that there are many common elements in these diverse reading activities, that the pupil's reading achievement is influenced by many personal factors, that progress in reading parallels closely a pupil's total development, that the strategic goals in teaching reading change as pupils mature, and that the methods of teaching used should be adjusted to the ends sought and the unique characteristics of the learner. A bibliography of 18 references is given. (*K.S.W.*)

FRENCH, E. L. Reading disability and mental deficiency: a preliminary report. *Train. Sch. Bull.*, 47, 1950, 47-57.

Since reading difficulty is defined as a failure to read at a level commensurate with mental age, there is no limitation with regard to I.Q. Nevertheless, the child with retarded intelligence has been neglected in the field of reading disabilities.

A study was performed to determine whether mentally retarded children who show patterns considered to be symptomatic of associational deficiencies could be benefitted by the application of remedial reading techniques. Many children at the Training School were discovered with reading levels below expectation based on M.A. Eighteen of these children showed typical 'strephosymbolic' patterns with definite associational difficulties. A group of three boys was selected, relatively homogeneous with respect to C.A., M.A., reading level, spelling level, and type of associational difficulty. A teacher taught them for five months using the author's revision of the Gillingham and Stillman method. The gains of reading level during the period of special instruction were in all cases considerably greater than would be expected of normal maturational growth. This is held to indicate that specific reading disabilities can exist in the mentally subnormal and may be remediable. (*A.J.B.*)

PHIPPS, M. Your reading program. *Instructor*, 60 (3), 1951, 18.

A child's speech is so closely related to abilities in word recognition and vocabulary development that the program for reading in Winchester, Mass. emphasizes better speech for better reading. Student discussion groups are arranged in which reports are given concerning suggestions for improving speech. Each one keeps a box of cards with ideas for his own speech correction.

The teacher and class prepare lists of words essential to the group for school subjects which is divided into categories: Basic, Extensive, and Enriched. When later checks are made on students' use of these words the teacher notes for each child's demonstration: (1) beginning sounds of words, (2) ending sounds of words, (3) words accented correctly, (4) tone of voice, (5) phrasing, (6) word pronunciation, and (7) comprehension of material read.

Other devices and games are used to encourage steady growth and development in the reading vocabularly of all pupils. (*L.L.H.*)

TYSON, R. Current mental hygiene practice. *J. clin. Psychol.*, 7, 1951, 2-94.

An inventory of mental hygiene suggestions, both preventive and therapeutic, from

literature in 1940 or following, is categorized as to area covered and as to method by which the suggestion operated or achieved its aim. A statistical analysis of the 2,394 suggestions reported gives the percentage of items for each of the various methodological categories utilized, and the implications for mental hygiene practice are developed. Area categories include: nature of good adjustment, feelings and emotions in personality development, maximizing intellectual resources, problems of self-regulation, physical and mental health, sex—general and in marriage, marriage and the family, social adjustments, work and play, and adjusting to old age. (*C.R.E.*)

Commemorative issue honoring Edgar Arnold Doll. *Train. Sch. Bull.*, 47, 1950, 69-114.

This issue contains a bibliography of 237 of Dr. Doll's articles and a reprint of 'The nature of mental deficiency' from the *Psychological Review*, 47, 1940, and 'Definition of mental deficiency' from the *Training School Bulletin*, 1941. (*A.J.B.*)

Fiedler, F. A comparison of therapeutic relationships in psychoanalytic, nondirective and Adlerian therapy. *J. consult. Psychol.*, 14, 1950, 436-445.

Ten electrically recorded interviews, taken between the sixth and seventeenth treatment hours, were obtained from 10 different psychotherapists representing expert and novice levels of practice and three separate views of psychotherapy. The Q-technique of analysis was applied to assessments of the 10 interviews on a 75-category scale by four judges, three psychotherapeutically sophisticated and one untrained. Expert psychotherapists correlated more closely with characteristics of the 'ideal' than did the non-experts. The expert psychotherapist resembled more closely the expert psychotherapists of the other schools of psychotherapy than he resembled the novice within his own school of therapy. (*C.R.E.*)

APA Committee on Ethical Standards for Psychology. Ethical standards in clinical and consulting relations. *Amer. Psychologist*, 6, 1951, 57-64.

A tentative formulation of standards is presented by introducing a problem, giving illustrative incidents, and formulating a guiding principle. Areas covered are: general responsibilities, maintaining high standards, recognizing limitations, defining agency due responsibility, offering services with inadequate training, maladjusted practitioners, and safeguarding responsible practice. (*C.R.E.*)

Gens, G. Correlation of neurological findings, psychological analyses and speech disorders among institutionalized epileptics. *Train. Sch. Bull.*, 47, 1950, 3-18.

The speech of 1252 patients at the Caro State Hospital for Epileptics in Michigan was examined for statistical purposes and to correlate all available neurological and psychological data with the speech findings. The patients were grouped in three main categories of speech emergence: (1) speech not developed, (2) speech fractionally developed and (3) impaired speech. There is a list of the etiologies found for each of these conditions. An attempt is made to reclassify speech disorders from a descriptive basis to an etiological basis with special reference to the time relation. Some of the contributions of this study are: (1) 76.3 per cent of the patients were found to have defective speech; (2) there is no speech typical of epileptics; (3) all speech disorders common in the general population are found in the epileptics; (4) too little evidence lies behind the 'epileptic personality' concept to warrant its contribution as a diagnostic sign. (*A.J.B.*)

Danenhower, H. S. Differential diagnosis: mental deficiency and sensory association defect. *Train. Sch. Bull.*, 47, 1950, 181-186.

This is a report of a child who had been diagnosed as feebleminded and later as autistic (Kanner's syndrome). Re-evaluation appears to indicate that this is primarily a problem of aphasia (word deafness). There are descriptions of symptoms and behavior and diagnostic criteria for the diagnoses. Exploratory teaching and nonverbal testing led to the new diagnosis and prognosis. (*A.J.B.*)

MacDonald, N. V. Home-made sense training material. *Volta Rev.*, 53, 1951, 8-9, 42-44.

This material was planned for very young deaf children, but may be used with any child who needs a readiness program. It is never used for drill, but merely for encouraging concentration. Some of the types of material are: matching color, form, objects, texture, large and small, sounds, odors, watching pictures, grading according to

size, form boards, jigsaws and puzzles. (*A.J.B.*)

JENSEN, K. Physical growth and physiological aspects of development. *Rev. educ. Res.*, 20, 1950, 390-410.

Much research is being done in this area by practically all scientific approaches and includes 'methods ranging from the use of radio-active isotopes to questionnaires.' The review of literature found in this article attempts to present only a few representative developments which may be of interest to educators.

Reviews are classified under the following: Prenatal development, mortality considerations, some factors conditioning postnatal growth and development, growth—stature and weight, adolescent development, growth of body segments and tissues, interrelatedness of some growth phenomena, body build and body proportions, growth of some bodily functions, appraisal of physical status and growth, and physical and physiological influences on mental growth. A 176 entry bibliography documents this review. (*L.L.H.*)

BAYLEY, N. AND ESPENSCHADE, A. Motor development and decline. *Rev. educ. Res.*, 20, 1950, 367-374.

The authors review researches which are concerned with age changes in motor abilities throughout the entire life span. While investigations have been broadened to include greater areas of research, the authors report a decline in the total number of studies in recent years.

The reviews are divided into the following categories: (1) Infancy and early childhood, (2) Age changes six to 18 years, (3) Changes in performance after 18 years, (4) Measurement, (5) Relation of motor abilities to other factors, (6) Nature of motor abilities, (7) Indications for future research. (*L.L.H.*)

PINNEAU, S. R. A critique on the articles by Margaret Ribble. *Child Develpm.*, 21, 1950, 203-228.

Ribble's thesis as developed throughout her articles is essentially that all infantile experiences are of great importance to the direction of the infant's development. She contends that the child is very sensitive to environment, lacks adequate organization of primary body functions, and shows great instability in those functions. She maintains that there must be a long period of 'mothering' if the infant is to develop normally physiologically, anatomically, and psychologically.

This critique presents an evaluation of Ribble's contentions, evidence and conclusions in the light of certain experiments, observations, and studies. The author believes that every one of Ribble's points has been refuted by these investigations and points to a direct refutation of her general thesis itself. A bibliography of 88 entries is given. (*K.S.W.*)

LLOYD, W. Group work with mothers in a child-development center. *Ment. Hyg.*, 34, 1950, 620-640.

The author describes the group work with mothers at a Child Development Center in Oakland, California. The reasons why some of the mothers come to the center is discussed and specific examples are cited showing how this service is operated. In the first phase of this work the focus of attention is on the child's behavior; then it is shifted to the mother's; and lastly upon the mother-child relationship. (*K.S.W.*)

MARTENS, E. H. Toward life adjustment through 'special education.' *Sch. Life*, 33, 1951, 52-54.

What are the high schools doing to meet the needs of the exceptional child? Special education in elementary schools is more than 50 years old. Although the number of exceptional pupils receiving special education in high schools almost doubled from 1938-1948, it is estimated conservatively that the total number of exceptional pupils who need help is now 10 times the number receiving aid. Some active programs and research projects are described. (*A.J.B.*)

CANFIELD, N. Audiology. *Hearing Aid*, 4 (4), 1950, 18-22.

This reprinting in article form of the first of a series of 13 lectures at a New York meeting covers very generally the nature of the field of audiology. The contributions of various professional groups are mentioned. A question and answer section is appended concerned primarily with psychogenic deafness. (*L.G.D.*)

Hearing News, Volume 19, issues 1 and 2, 1951, has been devoted to reprints of two symposia presented before the Twentieth National Conference of the American Hearing Society, Chicago, Illinois, June 15-17, 1950.

In the Symposium on industrial deafness, three members of the American Academy of Ophthalmology and Otolaryngology Subcommittee on Noise in Industry discuss research design and problems of liability and compensation for hearing loss.

In 'John Q. Public's Responsibility for Hearing Conservation,' four speakers discuss the city's responsibility, the state's responsibility, and the nation's responsibility for education and health. (*A.J.B.*)

FEILBACH, R. V. A hearing primer for nurses. *Volta Rev.*, 53, 1951, 5-7, 76-78, 82.

The public health nurse must spend some time studying audiometry. A scanning of audiological information is presented, including the following: clues for detecting hearing loss, pure tone and phonograph screening audiometry, diagnostic use of the audiogram, indications for lipreading, aids for the lipreader, use and cost of hearing aids, auditory training, speech problems due to hearing loss. Sources for further information on each topic suitable to the needs of the nurse are given. (*A.J.B.*)

LIERLE, D.M. AND KEASTER, J. Relationship of the otolaryngologist to the crippled child. *Crippled Child*, 30 (5), 1950, 6-7, 28.

One of the most important aspects of any program designed to rehabilitate those with crippling conditions is the interpretation of overt signs of the problem to the public. Not infrequently the orthopedically handicapped child may suffer from some other crippling condition as well. Clinical observations indicate that high frequency hearing loss is commonly found among cerebral palsied cases of the athetoid type. Hearing in such cases should be routinely tested for both pure tones and speech reception. The authors cite several studies of the incidence of hearing loss among crippled children of various types. (*K.S.W.*)

HALL, W. How Britain educates her deaf children. *Amer. Teach.*, 35 (3), 1950, 16-18.

Between 40 and 50 schools exist in Britain for training the 4,000 deaf or partially deaf children. Since 1944 the Education Act made free education available through the local governments. Two newer boarding schools are considered in detail. They accomodate children from age 2 to 7 and 12 to 19 respectively. The oral method is stressed and finger methods are discouraged. Classes are limited to 10 students. The first principle in teaching the deaf is to prepare them to lead normal lives. The pupils mix with hearing children from other schools, shop in town and enter local activities. There is no suggestion that deaf children belong to another world. Vocational guidance is part of the school's responsibility. (*A.J.B.*)

CAVANAGH, A. A new audio-visual aid for speech for the deaf and the hard of hearing. *Volta Rev.*, 53, 1951, 12-13, 40-42.

The use of the Chromovox in Junior High School 47, New York City is reported. The instrument was designed (1) to hold the interest of the hearing impaired pupil without using the same material daily and, (2) to speed up the process of correcting speech errors and help eliminate labored and halting speech. The rate of speech is determined by the speed of the tape in the machine, and may be varied by the teacher. The instrument has been used for speech training, lipreading, language drills and acoustic training. Specific techniques are listed under each use. (*A.J.B.*)

WHETNALL, E. Rehabilitation of the deaf. *Occup. Ther. Rehabilit.*, 29, 1950, 338-344.

This article, by a British writer, discusses normal speech and normal hearing, defines the types of deafness, and considers the psychological effects of partial and total acquired deafness and of congenital deafness.

The responsibilities of 'deafness clinics,' according to the author, are to diagnose and classify different types of deafness, especially in children; to give advice about education and rehabilitation; to provide facilities for training the partially deaf child and adult; and to educate the lay public. (*C.G.W.*)

MYKLEBUST, H. R. Differential diagnosis of deafness in young children. *J. except. Child*, 17, 1950, 97-101, 117.

Special techniques must be used in the differential diagnosis of deafness in young children. Research is needed to establish norms for auditory perceptual development. Children do not respond to sound for various reasons. Adequate diagnostic procedures include an evaluation of the total behavioral symptomatology and not only the response to sound. The conditions most often confused with deafness are mental deficiency, aphasia, and psychic deafness. Free field sound tests have been found more satisfac-

tory than pure tones for eliciting responses from children below six years of age. (*K.S.W.*)

Wood, K. S. A preliminary study of speech deterioration under complete binaural masking. *West. Speech*, 14 (4), 1950, 38-40.

Twenty subjects, half of whom had had some speech training, read sentences and discourse with complete binaural masking with white noise and without such masking. Each of the subjects then decided in which of the sentences the reading was clearest. The speech-trained students made the correct choice 91.5% of the time; the untrained, 61.5%.

The changes occurring in speech when the individual is deprived of his auditory monitoring system were also studied. When hearing was affected by the masking noise, vocal intensity increased, rate decreased, vowels were prolonged and sometimes diphthongized, consonant sounds seemed not to deteriorate, pitch went upward, nasal resonance became apparent in 13 of the subjects, inflectional range increased in five of the speech-trained subjects, and inflectional patterns became monotonous and repetitive in 15 speech-trained subjects.

The use of a recording machine in speech improvement or speech correction should be postponed until after training in critical listening. Vowel sounds should receive more attention in the phonetic training of school children, since vowels deteriorate more rapidly than do consonants under complete binaural masking. (*C.G.W.*)

Bangs, J. L. Hearing testing of young children. *West. Speech*, 14 (4), 1950, 35-37.

Testing the hearing of very young children poses a real problem to the audiometrist. Speech audiometry and pure-tone audimetry have been attempted, with special adaptations of techniques.

Keaster's procedure has presented a technique for speech audiometry, as has a method used by the University of Washington Speech and Hearing Clinic that requires the child to select pictures in response to monitored live voice delivered at known intensity levels, relative to normal hearing, through a high fidelity amplification system. This same technique also may be used to give simple commands to the child.

Other investigators have been concerned with methods for obtaining pure-tone audiograms for very young children. Dix and Hallpike have used a 'peep show' technique that conditions the child to respond to pure tone by pressing a switch to illumine a picture. Reger's test is similar, with a reward of candy for responses to pure tones heard. A 'block test' requires the child to move blocks in and out of a box in response to the pure-tone stimuli. Electroencephalography is expensive, time-consuming, and provides no reliable interpretation of the thresholds. The psychogalvanic skin response has also been used to determine the hearing acuity of small children, a tone-shock sequence being used to condition the child and the tone then being reduced until threshold is reached. (*C.G.W.*)

Manning, J. J. Preparing for ear impression. *Hearing Aid*, 3 (3), 1950, 10-13.

The manner in which an impression is taken for purposes of fabricating a plastic ear insert is described in detail. Mention is made of ear anomalies and pathologic processes where the taking of an impression is contraindicated, or where special precautions must be observed. Use of cotton packing is strongly recommended. (*L.G.D.*)

Wright, B. C. How we serve. *Hearing Aid*, 3 (3), 1950, 14-20.

The aims and function of the American Hearing Society are described, with illustrative examples. Over 115 active chapters are in existence. (*L.G.D.*)

Butler, S. Hearing and speech institutes. *J. Rehabilit.*, 16 (6), 1950, 10-13.

The author describes the operation of speech and hearing rehabilitation in Michigan especially from the viewpoint of reaching remote areas. An outline of 10 steps in organizing a hearing and speech institute is presented. (*K.S.W.*)

Gorman, T. North Dakota's clinic on wheels. *Today's Hlth*, 28 (11), 1950, 22-23, 44.

This article describes a mobile speech and hearing clinic which meets the needs of the rural areas of North Dakota. (*J.L.B.*)

Hardwick, F. Hearing aid trends. *Audio-Engin.*, 34 (6), 1950, 23-25.

A description is given of the present status of wearable hearing aids. Topics briefly covered are: types of hearing loss, AMA standard for rating hearing loss, three and four tube circuits, and receivers. Twelve illustrations. (*L.G.D.*)

SULLIVAN, J. A. The maintenance and improvement of hearing in radical mastoid surgery. *Canad. med. Ass. J.*, 64 (2), 1951, 113-118.

The author presents an excellent discussion of the etiology and pathology of various types of chronic otitis media. These include the following: (1) necrosis of the drum membrane; (2) necrosis of mucosa of the middle ear, annulus and membrane leading to secondary acquired cholesteatoma; (3) persistent focus of necrotic bone; (4) perforation of Shrapnell's membrane and/or primary acquired cholesteatoma; (5) allergic otitis; and (6) tuberculosis affecting the middle ear. There is a discussion of the indications for and description of complete radical mastoidectomy and a description of two prosthetic devices which may improve hearing in selected cases, i.e., an artificial middle ear and a plastic insert. (*S.J.O.*)

GARDNER, W. H. The speechmaster. *Volta Rev.*, 53, 1951, 53-54, 88-92.

This is the description of a new speech teaching tool designed by a teacher to help her students 'peek through my cheek and see how I place my tongue.' The Speechmaster is a molded lucite head including the hard and soft palate, upper and lower teeth and rubber tongue. The tongue is moved by levers in the back of the neck and a vibrator simulates voice. An evaluation of the instrument includes the following observations: (1) It is designed to show tongue positions in non-visible consonants, (2) it helps children see their errors, (3) children can practice without the teacher, (4) pupils can correct each other, (5) students are more relaxed when they use this tool, (6) it emphasizes one sound in a word series, (7) it speeds up sound sequence, (8) it aids production of nasal and non-nasal sounds, (9) it can be used with preschool children, (10) it helps distinguish between voiced and unvoiced consonants. (*A.J.B.*)

FAIRBANKS, G. A. physiological correlative of vowel intensity. *Speech Monogr.*, 17, 1950, 390-395.

The study represents an attempt to identify some physiological basis for the significant differences in the relative intensity of vowels. Data for the intensity measurements of the vowels were taken from a recent study by Fairbanks, House and Stevens. In the reference study 10 male subjects spoke 10 mono-syllabic words for each of 11 vowels. Most of the vowels were found to be significantly different from each other in mean relative intensity and appeared to 'permit the conclusion that these differences resulted primarily from changes in the supraglottal cavity.'

The above data were then related to certain measurements of x-ray tracings of the same 11 vowels phonated by one subject in a study reported by Parmenter and Bevans. The author measured the minimum channel diameter of the tracings between (a) the upper and lower lips, (b) the cutting edges of the upper and lower incisors, and (c) the highest point of the tongue and palate.

'The correlation between the relative power of vowels and relative channel diameter between the upper and lower incisor teeth was found to be significantly positive. On the basis of the assumption that laryngeal activity was essentially random in the intensity study, this correlation was tentatively interpreted as reflecting the effect of variations in the area of the mouth of the vocal conduit upon the power of the output.' (*D.C.S.*)

GOODFRIEND, L. S. Simplified reverberation-time calculation. *Audio-Engin.*, 34 (5), 1950, 20-21.

A rewriting of the Eyring formula for obtaining reverberation time is given, thus making possible the plotting of reverberation time (T) versus V/S (volume of room divided by total area of all absorbing surfaces). Illustrations include a chart for values of V/S from O-20. Figures obtained from the chart show reasonable agreement with data computed from the formula. (*L.G.D.*)

FAIRBANKS, G. An acoustical comparison of vocal pitch in seven- and eight-year-old children. *Child Develpm.*, 21, 1950, 121-129.

The author brings together for intercomparison the results of two previously reported acoustical studies of vocal pitch in the speech of two groups of boys at ages seven and eight and in comparable groups of female subjects. (Abstracts of both studies appear in a previous issue of the *Journal of Speech and Hearing Disorders.*)

The purpose of this study was to test the hypothesis that the four basic experimental groups, representing both sexes at two age levels, were random samples from the same population with respect to the

12 pitch characteristics studied. An analysis of variance does not support rejection of the null hypothesis for any of the 12 pitch characteristics studied. The author cites as particularly important the fact that pitch level and voice breaks were included in these. The analysis further indicated a tendency for a slightly larger variance in the group of male children and in the eight-year-old children. (*K.S.W.*)

Reid, J. D. Universal phonograph styli. *J. acoust. Soc. Amer.*, 21, 1949, 590-592.

The adoption of a universal stylus for use with both 78 rpm and slower speed records would minimize the present complexity resulting from various tone arms, cartridges and styli. Suggested specifications for this stylus are given; the resultant advantages bring elimination of confusion, scratch reduction, improved performance and reduced cost. (*L.G.D.*)

Hawley, M. E. and Kettler, A. H. The apparent source of speech in the mouth. *J. acoust. Soc. Amer.*, 22, 1950, 365-369.

Considering speech as emanating from a point source, the apparent source of 38 speech sounds was located for several young male talkers. Graphs are shown of frequency vs. source distance behind the lips in inches, as measured by use of a probe tube technique. Recognition is made of the fact that 'preceding and following sounds affect the production of the sound under consideration'. (*L.G.D.*)

Kaplan, S., Fair, B., Jessner, L., Cobb, S., Reyersbach, G. and Dwyer, T. A child's reaction to adenoidectomy. *Amer. J. Med.*, 9, 1950, 242-246.

Speech and psychological problems are discussed which may arise as a result of 'minor' operative procedures in children given inadequate psychiatric preparation. (*H.S.W.*)

Jackson, M. Otosclerosis—its surgical treatment. *S. Afr. med. J.*, 1949, 23, 353-356.

A practicing fenestrationist discusses problems in the treatment of otosclerosis and the rationale on which treatment is based. Complications of fenestration are described. (*H.S.W.*)

Keen, E. N. A method of measuring the profile angle at the nasion in skulls. *S. Afr. J. med. Sci.*, 1949, 23, 7-12.

Methodology for making one of the basic anthropometric measurements is described. (*H.S.W.*)

Ordman, D. Whooping cough in South Africa: its occurrence and controls. *S. Afr. med. J.*, 1949, 23, 338-347.

This is a detailed discussion of the role of pertussis as a cause and predisposing force in the production of disease and death in the human. The effects on the mechanisms of speech and hearing are discussed in detail as a medical problem. (*H.S.W.*)

Spock, B. Some common diagnostic problems in children. *Med. Clin. N. Amer.*, 34, 1950, 1079-1090.

The problems of tic, chorea, general restlessness, chronic resistance to sleep in infancy, separation anxiety and enuresis are discussed. (*H.S.W.*)

Braceland, F. Psychiatry - psychosomatic medicine and the general practitioner. *Med. Clin. N. Amer.*, 34, 1950, 939-956.

The author discusses the role of psychology and psychiatry in general medicine and related disciplines. (*H.S.W.*)

Boyd, D. The differentiation of psychosis from psychoneurosis. *Med. Clin. N. Amer.*, 34, 1950, 957-972.

This article presents a detailed analysis of the classical differences between psychosis and psychoneurosis. (*H.S.W.*)

News And Announcements

The Speech Clinic of the May T. Morrison Center for Rehabilitation was formally opened on March 5, 1951. It is the first clinic in San Francisco devoted exclusively to the treatment and correction of speech problems. It is open to any child or adult with a speech defect of any type, upon the referral of his physician.

The Morrison Speech Clinic was made possible by a gift of $4500 from Mr. R. H. Scanlon through the San Francisco Foundation, and matched by the same amount from the Rosenberg Foundation. Mary Wehe Huber has accepted the directorship of the Clinic. Dr. Huber was formerly Assistant Professor of Speech Correction at Brooklyn College, Consultant in Speech for the Cerebral Palsy Preschool Center at the Lenox Hill Hospital, and Speech Consultant of the New York State Association for Crippled Children, Inc.

Members of the Speech Therapy Advisory Committee are: Marcia Hays, M.D., Chief, Cerebral Palsy Division, Department of Public Health; Leon Lassers, Ph.D., Associate Professor of Education, San Francisco State College; Herbert Stolitz, M.D., Director of Special Schools and Special Services to the Handicapped, Bureau of Vocational Rehabilitation; Virgil Anderson, Ph.D., Director of Speech and Hearing Clinic, Stanford University; Robert C. Martin, M.D.; Harry M. Blackfield, M.D.; S. Waldo Coleman; and Nathan Nelson, Assistant District Supervisor, Bureau of Vocational Rehabilitation.

The new $2,850,000 Special Education Building at Illinois State Normal University was dedicated on March 2, 1951. Mrs. Spencer Tracy of the John Tracy Clinic, Los Angeles was the key speaker at the dedication services. A series of special conferences were held at this time in various areas of special education. Among the speakers was Arthur Hill, Chief of the Division of Exceptional Children of the U. S. Office of Education, Washington, D. C.

The new building includes space and equipment for the education of teachers for all types of handicapped children and for the operation of a laboratory school for 300 children from kindergarten through high school.

New facilities for training in speech clinical services have recently been made available at the University of Denver. Three temporary dormitories for women have recently been remodeled with the particular needs for the training of speech and psychological clinicians in view. The three buildings comprise a unit in which one serves as a new residence for children from outside the state under the Psychology Department; another serves as the Psychological Services for Children; and the third serves as the Speech Clinic for Children. The capacity of the residence is 24 cases,

News And Announcements is edited by Miriam D. Pauls, Johns Hopkins University.

and 70 for the Clinic. The entire program is running at full capacity at the present time.

In addition to special rooms with two-way mirrors, new equipment and laboratories have been made available for the supervision of the majors who are concentrating in speech correction. This is in addition to another laboratory nearby in audiology and the fitting of hearing aids and speech correction for adults.

During the leave of absence of Dr. Ruth Clark, at the University of the Witwatersrand, Johannesburg, South Africa, Dr. E. Ross Shutts has been Acting Director of the Children's Clinic in addition to his regular duties as Director of the Adult Speech and Hearing Clinic. Dr. Clark will return beginning in September. Until then, Mrs. Ruth Van Tine and Miss Libby Radus have direct supervision of the clinical cases among children.

The entire program which looks toward expansion of training into the larger area of the handicapped is being built under an executive committee composed of the Director of the School of Speech, Dr. Elwood Murray; the Chairman of the Department of Psychology, Dr. Lawrence W. Miller; and the Director of the School of Education, Dr. Lloyd Garrison.

A new course called Symposium and Workshop in Public School Speech Correction will be offered by the University of Southern California during the 1951 summer session. In addition to the offerings of Mr. Conrad Wedberg, Lecturer in Speech, U. S. C., and Field Representative of the Bureau of Special Education, California State Department of Education, the course will include lectures by visiting faculty, including: Dr. Ollie Backus, Director of the University of Alabama Speech and Hearing Clinic; Mrs. Verna Breinholt, Consultant in Speech Education, Orange County Schools; Mr. F. W. Doyle, Chief of Bureau of Special Education, California State Department of Education; Dr. Norman W. Freestone, Head of Speech Education, Occidental College; Dr. Margaret Hall, Supervisor of Speech Correction, Chicago Public Schools; Miss Miriam Keslar, Supervisor of Speech Correction, Los Angeles City Schools; Mrs. Harriet Kopp, Consultant in Speech Correction, Birmingham (Mich.) Board of Education; Dr. George Kopp, Director of Speech Science and Correction Division, Wayne University; Dr. John C. Snidecor, Dean of Division of Applied Arts, University of California, Santa Barbara College; Mr. J. J. Thompson, Speech Therapist, Pasadena City Schools. The symposium will take place during the six-week session, June 25-August 3.

Michigan School for the Deaf has announced the establishment of a Hard of Hearing Clinic to be conducted in conjunction with an aural rehabilitation program for hard of hearing school children in Michigan. Children from local school systems without special facilities will be given hearing tests and fitted with hearing aids in the Clinic, after which they will attend the hard of hearing classes at the Michigan School. They will receive training in speechreading, the use of hearing aids, auditory training and their regular school subjects. Where necessary, they will also receive speech correction. At the end of the special short-term session at the Michigan School, the pupils will return to their respective public schools.

A specially trained teacher-clinician with public school background has been employed to operate the clinic and conduct the classes. The hearing conservation service of the Health Department will assist in the purchase of hearing aids for children who are recommended for hearing aids but are financially unable to purchase them.

The unique feature of the M.S.D. Clinic is the availability of aural rehabilitation for hard of hearing children during the school year without any disruption in the school achievement of the child. It is planned that children of about the same age level and achievement will attend the same short-term session.

A three-weeks concentrated course on Education and Treatment of the Cerebral Palsied Child will be offered this summer by Michigan State Normal College, Ypsilanti, in cooperation with the National Society for Crippled Children and Adults, Inc. and the Michigan Society for Crippled Children and Adults. It is a background course designed primarily for teachers of cerebral palsied children. The course will be held from June 25 to July 13, and will consist of lectures, demonstrations, and observations.

Members of the National Society Staff who will participate are: Verna S. Carlisle, Child Development Consultant; Elizabeth Wagner, Occupational Therapist Consultant; Meyer A. Perlstein, M.D., Medical Consultant in Cerebral Palsy, Secretary of the American Academy for Cerebral Palsy; Jayne Shover, Associate Director, Consultant in Special Education; Harold Westlake, Consultant in Speech Therapy for the Society and Director, Speech and Hearing Clinic, Northwestern University. The course coordinator is Sara E. Wright.

Camp Woodrow Wilson, the summer speech improvement camp sponsored by the Speech and Hearing Center, University of Virginia, in cooperation with the Virginia Society for Crippled Children and Adults, Inc. will be in session from June 24 to August 18, 1951. The purpose of the camp is to provide the means by which children possessing speech problems may be assisted in the correction of their handicaps. The camp program, which includes all forms of indoor and outdoor recreational activities, social events, and opportunities for individual and group practice in speech improvement has been devised to meet the physical, environmental, and intellectual needs of the children.

The camp is operated as a nonprofit enterprise and the fees are set to cover instructional and operating costs. The fee is $250 for the eight-weeks session. Applications are not limited to residents of the state of Virginia. For information write: James M. Mullendore, Speech and Hearing Center, 58 E. Range, University of Virginia, Charlottesville, Virginia.

The twentieth annual session of Shady Trails, the speech improvement camp of the University of Michigan, will be held from June 25 to August 18. It is devoted exclusively to the alleviation of speech problems in boys and young men. Enrollment is limited to 90 students, aged 8 through 24.

Current catalogue, application, and information will be sent to parents, educators, physicians, and others upon

request. Address University Speech Improvement Camp, 1007 East Huron Street, Ann Arbor, Michigan.

A residence school for hearing and speech impaired children is being held at Syracuse University during the summer of 1951. This program, utilizing the facilities and staff of the University Hearing and Speech Center, will cover the six-week period from July 5 to August 11, and is intended for children of school age who do not have access to corrective training in their own schools.

The British College of Speech Therapists will hold a conference in the spring of 1952. The main theme will be 'Clinical Practice and Therapeutic Measures.' An invitation is extended to members of ASHA to participate in this conference. Information may be obtained from: The Conference Secretary, The College of Speech Therapists, 68, Queen's Gardens, London, W. 2.

On invitation of University College of the University of Chicago, a Conference on General Semantics will be held at the University of Chicago, Friday and Saturday, June 22 and 23. Information as to program and arrangements will be sent to members of the Society by mail and announced through *ETC*. During the two days of the Conference, the first membership meeting of the International Society for General Semantics will also be held.

The thirty-fifth biennial meeting of the Convention of American Instructors of the Deaf will be held at the Missouri School for the Deaf, Fulton, Missouri, June 17-22. The theme of the convention is 'A Century of Progress—What of the Future?'

The forty-second annual meeting of the Eastern Public Speaking Conference was held in Boston, March 29-31. The New York League for Speech Improvement sponsored a program in practical techniques for the correction of speech disorders. Papers on therapy in the public school, college, mental hygiene clinic, and hospital clinic were read.

Personnel from the National Veteran's Administration program for rehabilitation of aphasic veterans, under the chairmanship of Edwin M. Cole, M.D., held a clinic and discussion at Massachusetts General Hospital for interested speech therapists.

Two sessions were devoted to audiologic problems. One was a symposium on the testing of hearing of young children; the other, a session on the rehabilitation of the hard of hearing with particular emphasis on the problems of children.

The American Association on Mental Deficiency held its Seventy-Fifth Annual Convention and Second International Congress in the Hotel New Yorker, New York City, May 22-26. Of special interest to members of ASHA was the panel session on speech and hearing problems associated with mental deficiency. Dr. George W. Gens, The Training School at Vineland, served as chairman of the panel. Dr. Jon Eisenson, Queens College; Dr. Louis M. DiCarlo, Syracuse University; Hugo F. Schunhoff, Gallaudet

College; and Deso A. Weiss, M.D., New York, were the panel discussants.

The Temple University Eighth Annual Reading Institute was held in Philadelphia from January 29 to February 2. Delegates attending the week's program of meetings for reading specialists, classroom teachers and supervisors, represented 30 states. In addition, there were several delegates from Canada and one from New Zealand.

Throughout this conference, the sequence of language development and the relation of reading instruction to this sequence was emphasized. Under the guidance of Dr. Emmett A. Betts, the Reading Clinic Staff and such visiting lecturers as Dr. Ernest Horn, conferees were trained in practical classroom techniques for the teaching of reading. Laboratory sessions were provided to give delegates an opportunity to use these techniques under the supervision of trained specialists.

Temple University has announced that 'Prevention and Correction of Reading Difficulties' will be the theme for the next Institute program, which is scheduled for the week of January 28 to February 1, 1952. Those interested in securing advance information should write to Dr. Emmett A. Betts, The Reading Clinic, Temple University, Philadelphia 22, Pennsylvania.

The eleventh annual Parent Institute-Nursery School of the Michigan School for the Deaf was held April 2 through April 13. It was presented with the special assistance of the University of Michigan and the Michigan State Normal College, as well as some 20 other Michigan agencies and institutions interested in children. The purpose of the Institute is to accelerate the early educational and social development of deaf and hard of hearing children through the instruction of their parents. Mrs. Spencer Tracy was the key speaker of the session. The program consisted of talks by specialists, discussion periods, and visits to special classes for children with hearing impairments. The children attended a two-weeks nursery school.

The Speech and Hearing Rehabilitation Clinic, University of Illinois, held its annual workshop for parents of preschool deaf children at the Illinois Eye and Ear Infirmary from January through March. It consisted of discussions led by various authorities emphasizing the physical, social, emotional, and educational development of the deaf child. There were demonstrations in which parents participated with their children. The Workshop was conducted by Marian Quinn.

The Department of Otology, School of Medicine, Temple University, held a four-day seminar on problems of the deaf in March. The first session was centered around medical aspects of hearing impairment and the effects of deafness in infancy. The second session was devoted to the education of children with impaired hearing. The third session was directed at adult hearing problems and vocational rehabilitation; while the final evening was given over to a discussion of the social and emotional problems of deafness. Mathew S. Ersner, M.D., Professor of Oto-rhinology, Temple University, directed the seminar.

The New York League for Speech Improvement elected the following officers for 1950-51: president, Kathryn Mulholland, Brooklyn College; secretary, R. Crobin Pennington, College of the City of New York; and treasurer, Deane Finne, College of the City of New York.

At the March dinner meeting of the group, Dr. and Mrs. Smiley Blanton discussed 'The Development of Speech and How It Can Go Wrong, Phonetically or Psychologically.' Dr. Blanton is now co-director of the Religio-Psychiatric Clinic of the Marble Collegiate Church of New York City.

Seventeen fellowships totaling $5,000 were awarded jointly by Alpha Gamma Delta, international women's fraternity, and the National Society for Crippled Children and Adults, to employment and placement counselors for a special course designed to help meet the employment problems of handicapped workers. The grants accompanying the fellowships covered tuition and maintenance for the special course which was held March 12 to April 6 in New York at the new Institute of Rehabilitation and Physical Medicine, New York University, under the auspices of the School of Education.

This was the fourth such course to be offered under joint sponsorship of Alpha Gamma Delta and the National Society. To date 64 employment and placement counselors from 32 states, the District of Columbia, three Canadian provinces and Puerto Rico have been trained. The purpose of the counselor training program is to encourage public and private agencies to increase their services for the severely handicapped. This program is part of the national cerebral palsy program started five years ago by the National Society to provide treatment, training and employment services for the cerebral palsied.

The Committee on International Relations of the National Education Association has announced the establishment of a special service to help teach international understanding. It is called The United Nations Education Service and provides a threefold service for teachers and educational institutions. First, it provides *UNIT* (United Nations Information for Teachers) which is a bi-weekly newsletter providing first-hand information on world affairs. Second, it selects and distributes kits, pamphlets and audio-visual materials suitable for teachers and students; it also provides specially prepared teaching units, as well as offering direct assistance to specific inquiries. Third, it will provide a permanent officer to represent the teaching profession at the UN. For information write: United Nations Education Service, 1201 Sixteenth Street, N.W., Washington 6, D.C.

A new booklet, *The Child with Cerebral Palsy*, has been made available by the Children's Bureau and the Office of Education, both of the Federal Security Agency. It is prepared especially for the parents. A limited supply is available without charge from the Children's Bureau, Federal Security Agency, Washington 25, D. C. Copies may also be purchased at 10 cents each from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Three publications, *Classroom Radio Receivers, School Sound Systems,* and *School Sound Recording and Playback Equipment*, are available at no cost from the U. S. Office of Education, Washington 25, D. C.

The vacancy on the Committee on Ethical Practice of ASHA has been filled by the appointment of Darrel Mase. Raymond Carhart has resigned his appointment as Chairman of the Committee on Clinical Standards in Hearing, and has been replaced by Leo G. Doerfler.

Graduate Assistantships, Fellowships, and Scholarships

This section lists part-time graduate appointments, fellowships, and scholarships specifically designated for graduate work in speech and hearing. General university fellowships and scholarships, unspecified as to area of concentration, and full-time graduate positions will not be included.

Copy should be submitted to the Editor, and should include formal title of appointment, institution, and unit; dates, general duties, and remuneration; name and address of persons receiving applications. Deadline for receiving copy is two months prior to the publication date.

Clinical Assistantships. University of Alabama. Speech and Hearing Clinic. Starting September, 1951. Ten hours of individual and group instruction per week during the academic year. $900; remission of out-of-state tuition. Student is expected to enroll for three-quarters graduate load. Other assistantships also available involving 5 hours of instruction per week; paying $450; remission of out-of-state tuition; full academic load required. Some assistantships may combine teaching and clinical work. Address T. Earle Johnson, Department of Speech, University, Alabama.

Clinical Assistantships. Purdue University. Speech and Hearing Clinic. Starting September or February. Half-time; 20 hours per week of clinical assistance. $1200 for regular school year; waiver of tuition fees. Student may enroll for 10 semester hours of graduate courses. Address M. D. Steer, Speech and Hearing Clinic, Purdue University, West Lafayette, Indiana.

Clinical Assistantships. University of Illinois. The Speech Clinic, Department of Speech. Starting September or February. Half-time; 20 hours per week of clinical assistance. $1200 for nine months; remission of tuition. Student expected to enroll for three-fourths of normal graduate course load. Address Karl R. Wallace, 138 Lincoln Hall, University of Illinois, Urbana, Illinois.

Clinical Assistantships. Western Reserve University (Granted by the Cleveland Hearing and Speech Center). Starting September 1. $700 to $1200 for 12 months (two weeks vacation); remission of 9 hours of tuition each semester; 20 hours of clinical assistance per week. Address Director of Admissions, Western Reserve University, 11124 Euclid Ave., Cleveland 6, Ohio.

Clinical Assistantships. University of Pittsburgh. Speech Clinic. Starting September, 1951. Half-time; 20 hours per week of clinical assistance. $1000 for regular school year; waiver of tuition fees. Student may enroll for three-quarters graduate load. Good possibilities of extending assistantship through eight-week summer session at same rate. Address Jack Matthews, Speech Clinic, University of Pittsburgh, Pittsburgh, Penna.

Clinical Assistantship. University of California, Los Angeles. The Speech Clinic, division of the Psychological Clinic. June 18, 1951 to August 11, 1951. (These dates overlap with the University Summer Session.) Half-time; 20 hours per week for 8 weeks of clinical assistance; $230. Student expected to enroll for graduate courses. Address Joseph Sheehan, Speech Clinic, Department of Psychology, University of California, Los Angeles 24, California.

Clinical Assistantships. University of Southern California. Speech Department. Diagnosis and supervision of cases in the Speech and Hearing Clinic equivalent to 6 or 8 units of work per semester. $80.00 per semester unit of work; free tuition not included. Assistants normally carry 8 to 12 units of study per semester. Address Milton Dickens, Department of Speech, University of Southern California, Los Angeles 7, California.

Clinical and Research Assistantships. Ohio State University. Department of Speech. Starting September, January, March, or June. 15 to 25 hours per week of clinical or research assistance. Two-thirds to three-fourths graduate load. Address W. Hayes Yeager, Chairman, Department of Speech, The Ohio State University, Columbus, Ohio.

Research, Clinical and Technical Assistantships. State University of Iowa. Speech Clinic and Experimental Phonetics Laboratory. Starting September 1. Half-time; 20 hours per week. $720 to $900 for nine months; remission of tuition. Assistants allowed to carry 12 semester hours of course work. Applications for the 1951-52 academic year received until July 1, 1951. Address Wendell Johnson, Speech Clinic, State University of Iowa, Iowa City, Iowa.

Research Assistantships. Purdue University. The Voice Science Laboratory, Department of Speech. Starting September or February. Half-time; 20 hours per week of laboratory research assistance. $1200 for regular school year; waiver of tuition fees. Student may enroll for 10 semester hours of graduate courses. Address M. D. Steer, Voice Science Laboratory, Department of Speech, Purdue University, West Lafayette, Indiana.

Research Assistantships. University of Illinois. The Speech Research Laboratory, Department of Speech. Starting September, February, or June. Half-time; 20 hours per week of laboratory research assistance. $1200 for nine months, or $1465 for eleven months; remission of tuition. Student expected to enroll for three-fourths of normal graduate course load. Address Grant Fairbanks, 321 Illini Hall, University of Illinois, Urbana, Illinois.

Teaching Assistantships. Purdue University. Department of Speech. Starting September or February. Half-time; 8 hours per week of clinical work and 12 hours teaching duties in required beginning Speech course. $1200 for regular school year; waiver of tuition fees. Student may enroll for 10 semester hours of graduate courses. Address A. H. Monroe, Department of Speech, Purdue University, West Lafayette, Indiana.

Graduate Scholarships. Central Institute for the Deaf. Tuition scholarships for teacher training course in education of the deaf and hard of hearing, and in speech correction. Address Registrar, Central Institute for the Deaf, 818 South Kingshighway, St. Louis 10, Missouri.

Research Assistantship. Western Reserve University (Employment at the Cleveland Hearing and Speech Center). Starting September 17, 1951. $800 for 9 months, remission of 9 hours of tuition each semester; 20 hours of research weekly. Address Director of Admissions, Western Reserve University, 11124 Euclid Ave., Cleveland 6, Ohio.

Teaching Assistantship. Western Reserve University (Granted by the Cleveland Hearing and Speech Center). Winter and Spring Sessions; 9 hours of tuition exemption each session. $500 for five morning sessions weekly, teaching preschool deaf. Address Director of Admissions, Western Reserve University, 11124 Euclid Ave., Cleveland 6, Ohio.

Graduate Scholarships. Western Reserve University (Training at the Cleveland Hearing and Speech Center). Remission of full tuition. Applications received immediately. Address Director of Admissions, Western Reserve University, 11124 Euclid Ave., Cleveland 6, Ohio.

Working Scholarships. Western Reserve University (Employment at the Cleveland Hearing and Speech Center). Remuneration and working time arranged according to demands for clinical service and needs of student. Address Director of Admissions, Western Reserve University, 11124 Euclid Ave., Cleveland 6, Ohio.

Fellowship. Western Reserve University (Granted by the Cleveland Hearing and Speech Center). Fellowships in research and therapy. Starting September 1. $1200 for 12 months (two weeks vacation); remission of 9 hours of tuition; 20 hours of employment per week. Address Director of Admissions, Western Reserve University, 11124 Euclid Ave., Cleveland 6, Ohio.

Fellowships. Central Institute for the Deaf. Fellowships in education of the deaf and hard of hearing, speech correction, audiology, acoustics, neuro-physiology, experimental otology. Stipends to be arranged according to background and needs of ap-

plicant. Address Registrar, Central Institute for the Deaf, 818 South Kingshighway, St. Louis 10, Missouri.

Fellowships. The Johns Hopkins University. Hearing and Speech Center. Two special fellowships in audiology and speech awarded annually; may be continued at discretion. $3100; no duties beyond satisfactory pursuit of graduate requirements. Applications considered at any time; awards made in June. Address William G. Hardy, Hearing and Speech Center, The Johns Hopkins Hospital, Baltimore 5, Maryland.

Fellowships. University of Wichita (Employment in the Institute of Logopedics). Eight service fellowships; duties primarily clinical. $200 to $250 per month; student is expected to pursue course work toward the M.A. degree. Address Martin F. Palmer, Institute of Logopedics, 2400 Jardine Drive, Wichita 14, Kansas.

Fellowship. State University of Iowa. Fellowship in audiology. Starting September 1. Half-time; 20 hours per week. $1000 for nine months; remission of tuition. Fellows allowed to carry 12 semester hours of course work. Applications for the 1951-52 academic year received until July 1, 1951. Address Wendell Johnson, Speech Clinic, State University of Iowa, Iowa City, Iowa.

Fellowships. Purdue University. Speech and Hearing Clinic. Starting September, 1951; may be renewed. Three research fellowships. $100 per month; student may enroll for full-time graduate study. Candidate must have completed M.A. or M.S. with major in Speech Pathology, Voice Science, or Audiology. Address M. D. Steer, Speech and Hearing Clinic, Purdue University, West Lafayette, Indiana.

Personals

Anna Duke Farkas (M.A., Iowa) has accepted a position at the Speech and Audiology Clinics of the Children's Memorial Hospital in Montreal, Canada.

Donald M. Markle, former hearing consultant with the Michigan Department of Health, has been appointed Supervisor of the Section on Audiology and Phonology, Columbia-Presbyterian Medical Center, New York, New York.

Bernard Silverstein, who received his B.A. in Science from the Pennsylvania State College and his M.S. in Speech Pathology from Temple University, accepted a position on the Navy Research staff in the Voice Science Laboratory at Purdue University as of February, 1951.

Robert Bilger returned from the Marine Corps School, Quantico, Virginia, and is now on the resident Naval Research staff in the Voice Science Laboratory at Purdue University.

M. D. Steer spent the week of December 16 at the Naval Air Station, Pensacola, Florida, investigating voice communication research.

The staff of the Division of Speech Correction of the Chicago Public Schools, under the direction of Dr. Margaret E. Hall, has been increased this school year by the creation of seven new positions, bringing the total staff to 62. The following speech therapists have been appointed to fill these positions and several previously existing vacancies: Dorothy Anderson, B.A., Augustana College; Bernice Fein, M.A., State University of Iowa; Rhea Friend, B.S., Northwestern University; Helene Iglowitz, B.S., University of Illinois; Rosemary Furey, B.S., Northwestern University; Lucy Kibler, M.A., Northwestern University; Betty Klett, B.A., University of Denver; Ralph Konze, M.A., Northwestern University; Joyce Newman, B.S., University of Minnesota; Phyllis Pincus, B.A., Grinnell College; Carol Raymond, M.A., State University of Iowa; Norma Rosenberg, B.S., University of Illinois; Phyllis Tenney, B.A., State University of Iowa; Rosalee Thomas, Northwestern University.

Mrs. Margaret Rostel has been appointed Director of Public Relations for the American Hearing Society. She directed the nationwide publicity campaign in connection with 1951 National Hearing Week sponsored by the American Hearing Society in cooperation wih its 115 Chapters throughout the United States, May 6-15.

Raymond H. Stetson, 78, Professor and Professor Emeritus of Psychology, Head of Department of Psychology, Oberlin College, 1909-1939, died September 4 at Allen Memorial Hospital.

Dr. Stetson was born in North Ridgeville, Ohio. He completed his undergraduate

work at Oberlin College, and taught chemistry and zoology for six years prior to attending Harvard University in 1899.

Psychology, at this time, had not yet emancipated itself from the apron strings of philosophy. At Harvard, two great names, James and Royce, dominated the intellectual atmosphere. It is significant that Dr. Stetson chose to write his thesis under Münsterberg rather than either James or Royce. Like Dewey, Stetson rejected the 'mind-body' dichotomy. Like Dewey, he manifested great predilection for, and faith in the scientific method. But unlike Dewey, all his investigations were anchored in the framework of the scientific method. For this reason his theoretical structure could embrace the general principles of Bekhterev, Max Meyer, Watson, Hull, and even Wheeler. His psychological theory was never absolute, but underwent continued modification as illustrated by his publications: 'A Motor Theory of Rhythm and Discrete Discretion,' 1905; 'Motor Phonetics,' 1928; 'The Relation of the Phoneme and the Syllable,' 1936.

Dr. Stetson's initial research stemmed from, and was modified by his interests in rhythm and the analysis of skilled movements. For half a century he and his students have continued objective experimental research in phases of skin sensations, skilled movements, learning, and phonetics.

Upon his retirement in 1939, a number of his students honored him with the publication of research papers in a commemorative volume of the *Journal of General Psychology*. To Stetson this event was the most outstanding honor he had ever received. An examination of the volume reveals the catholicism of his interests as reflected by the range of topics. Papers by Sperry, Hubbard, Hudgins, Miller, Galambos, Hudgins and DiCarlo investigate muscle action. The paper by Hudgins and DiCarlo indicates Stetson's interests and research in correct speech and motor phonetics. Papers by Cole and Beck and Smith investigate learning. A paper by Ellsworth reveals his feeling that aesthetics might be considered as an analysis of form and rhythm.

Stetson's work, although voluminous, is relatively little known by American scholars for two reasons: first, in experimental phonetics he adhered strictly to the physiological rather than the acoustic approach; secondly, the bulk of his work was published in foreign journals and periodicals.

In evaluating Dr. Stetson's work, one need not be overwhelmed by the factor of time. All of his work met the rigid disciplines of experimental design and scientific method. Each successive investigation added to his basic theoretical structure. Upon conferring an honorary degree in 1942, President R. N. Wilkins of Oberlin College epitomized Dr. Stetson's stature: 'Raymond Herbert Stetson, scientist par excellence, analyst of the motion that is life, Leonardo turned at last psychologist, I confer upon you the degree of Doctor of Science.'